From: Hackett, John [John.Hackett@aptim.com]
Sent: Monday, October 19, 2020 4:52 PM
To: Mccray, Sean-Ryan CTR (USA) [sean-ryan.mccray.ctr@navy.mil]
CC: Stoick, Paul T CIV USN NAVFAC SW SAN CA (USA) [paul.stoick@navy.mil]; Johnson, Nels [Nels.Johnson@aptim.com]; Bercik, Lisa M. [lisa.bercik@aptim.com]
Subject: [Non-DoD Source] HPNS Parcel D-2/UCs RTC and RLSO Files 2 of 2
Attachments: TCP_DF Oct 2020 RLSO.doc; CQCP_DF Oct 2020 RLSO.doc; DF_SAP_ParcelD_UCs Oct 2020 RLSO.doc; DMP_DF Oct 2020 RLSO.doc; SAP Fig2_D2_Trenches (Rev1).pdf; SAP Fig4_UC2_Trenches (Rev1).pdf; SAP Fig5_UC3_Trenches (Rev1).pdf; SAP Fig10_Cesium137_Proposed (Rev1).pdf; SWMP_DF Oct 2020 RLSO.doc

Second email…

Sean-Ryan,

Attached please find the RTCs and revised Word files in RLSO. This first email has the updated Work Plan text and figures, and a second email will have the updated appendix files including the SAP. Please let us know if you have any questions or we should discuss any of the responses further.

Thanks,
John

JOHN R HACKETT, PE, CHP, PMP
Project Manager

APTIM | Government Strategic Business Unit

O 303 486 2552
(b) (6)
E john.hackett@aptim.com

5690 DTC Boulevard, Suite 600
Greenwood Village, CO 80111

aptim.com

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX C

DRAFT FINAL
CONTRACTOR QUALITY CONTROL PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

DCN: APTM-0006-5345-0009

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX C

DRAFT FINAL
CONTRACTOR QUALITY CONTROL PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Aptim Federal Services, LLC
4005 Port Chicago Highway, Suite 200
Concord, CA 94520

Contract Number: N62473-17-D-0006; Task Order: N6247318F5345
DCN: APTM-0006-5345-0009

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX C

DRAFT FINAL
CONTRACTOR QUALITY CONTROL PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

Approved By: _____ _____

Kevin Hoch
Quality Control Manager

Date

Approved By: _____ _____

Nels Johnson, PE, PMP
Project Manager

Date

DCN: APTM-0006-5345-0009

Table of Contents

LIST OF ATTACHMENTS ..... **II**
ACRONYMS AND ABBREVIATIONS ..... **II**

1.0 INTRODUCTION **1-1**
2.0 QUALITY CONTROL ORGANIZATION **2-1**
2.1 Quality Control Personnel and Qualifications 2-1
2.1.1 Project Quality Control Manager 2-1
2.1.2 Alternate Project Quality Control Manager 2-2
2.2 Quality Control Directives 2-2
2.3 APTIM Quality Procedures 2-3
3.0 SUBMITTALS, SUBCONTRACTORS, AND TESTING **3-1**
3.1 Project Submittals 3-1
3.2 External Organizations 3-1
3.3 Testing Procedures 3-1
3.4 Testing Plan and Log 3-2
3.5 Backfill and Site Restoration 3-2
3.6 Testing and Documentation 3-3
4.0 REWORK ITEMS, NON-COMPLIANCES, AND CORRECTIVE ACTION REQUESTS **4-1**
4.1 Rework 4-1
4.2 Non-Compliances 4-1
4.3 Corrective Action Requests 4-1
4.4 Procedures for Tracking Laboratory Deficiencies 4-1
5.0 DOCUMENTATION **5-1**
5.1 Daily Reports 5-1
5.1.1 Daily Contractor Quality Control Report 5-2
5.1.2 Daily Contractor Production Report 5-2
5.1.3 Quality Control Specialist Report 5-2
5.2 Quality Control Meeting Minutes 5-2
5.3 Quality Control Validation 5-3
5.4 As-Built Drawings 5-3
6.0 DEFINABLE FEATURES OF WORK **6-1**
7.0 THREE PHASES OF CONTROL **7-1**
7.1 Preparatory Phase 7-1
7.1.1 Preparatory Phase Activities 7-2
7.2 Initial Phase 7-4
7.3 Follow-up Phase 7-4
7.4 Additional Preparatory and Initial Phases 7-4
8.0 COMPLETION INSPECTIONS **8-1**
8.1 Punch-Out Inspection 8-1
8.2 Pre-Final Inspection 8-1
8.3 Final Acceptance Inspection 8-1
8.4 Inspection Documentation 8-1
9.0 REFERENCES **9-1**

List of Attachments

Attachment 1 Quality Control Organization Chart
Attachment 2 Project Quality Control Duties and Responsibilities
Attachment 3 Project Quality Control Manager Letter of Designation
Attachment 4 Alternate Project Quality Control Manager Letter of Designation
Attachment 5 Outside Organizations
Attachment 6 Submittal Register
Attachment 7 Testing Plan and Log
Attachment 8 Definable Features of Work Matrix
Attachment 9 Organization and Personnel Certifications
Attachment 10 Procedures (Procedures will be included if requirements for project-specific quality procedures arise as the project progresses)

Acronyms and Abbreviations

APP/SSHP	*Final Accident Prevention Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California*
AMS	*APTIM Management System*
APTIM	Aptim Federal Services, LLC
COR	Contracting Officer Representative
CQC	contractor quality control
CTO	contract task order
DFOW	definable feature of work
KO	Contracting Officer
Navy	U.S. Department of the Navy
PM	project manager
QA	quality assurance
QC	quality control
QCD	quality control directive
T&D	transportation and disposal

1.0 INTRODUCTION

Aptim Federal Services, LLC (APTIM) prepared this contractor quality control (CQC) plan under Contract No. N62473-17-D-0006, Contract Task Order (CTO) N6247318F5345 to describe the quality control (QC) actions that will be implemented during the radiological removal activities at Parcels D-2, UC-1, UC-2, and UC-3, former Hunters Point Naval Shipyard, San Francisco, California. This CQC plan will be used in conjunction with the following:

- *Final Corporate Quality Management Plan, Contract N62473-17-D-0006, Environmental Multiple Award Contract for Remediation of Radiological Contaminants (RADMAC II)* (CB&I Federal Services LLC, 2017a), which includes quality control directives (QCDs)
- *APTIM Management System* (AMS; APTIM, 2020)

Soil-investigation-removal-action activities include the following:

- Mobilization and site setup
- Maintenance of best management practices
- Utility clearance and land survey
- Radiological surveys
- Concrete and/or asphalt removal
- Excavation and backfill
- Soil screening
- Direct push technology soil sampling
- Site restoration
- Waste transportation and disposal (T&D)
- Demobilization

Radiological work will be performed in accordance with U.S. Nuclear Regulatory Commission Radioactive Materials License 20-31340-01, California License 7789-07, and associated procedures and work instructions. Radiological safety procedures and roles and responsibilities of the radiological organization are described in the *Final Radiation Protection Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California* (APTIM, 2019a). Removal work will be performed per the work plan.

This CQC plan was developed to ensure project activities are conducted in a planned and controlled manner, the product of these activities conforms to contract requirements, and appropriate documentation exists to support each activity for which APTIM is responsible.

A Project QC Manager will be present at the work site to implement and manage the QC Program. The Project QC Manager will work closely with the Project Manager (PM) and with the U.S. Department of the Navy (Navy) quality assurance (QA) representatives to assure work is performed in compliance with specifications contained in this work plan and CQC plan. The Project QC Manager has the authority to stop work if contract requirements are not being met. In the event that the Project QC Manager is unavailable, an Alternate Project QC Manager will assume this responsibility.

The Program QC Manager for this Navy contract is responsible for developing, maintaining, and enforcing the QC Program for the contract, and will work directly with the PM and the Project QC Manager to assure that work is performed in compliance with the contract. The Program QC Manager will serve as an alternate contact for the Project QC Manager if questions arise regarding acceptability of materials or performance during the project.

The PM reports to the Program Manager for the contract, who has the responsibility and authority to ensure that the work is performed according to the approved specifications and to the Navy's satisfaction.

Attachment 1 depicts APTIM's project organization for this CTO. Attachments 2 through 9 are documents from the QCDs tailored to this CTO, which will help achieve statement CTO objectives. Attachment 10 includes QCD 24.0. If additional QCDs are required as the project progresses, these procedures will be inserted into Attachment 10.

2.0 QUALITY CONTROL ORGANIZATION

APTIM structured its corporate QC organization to support the Program Managers and PMs who have ultimate responsibility for the quality of services APTIM provides. The Program Managers and PMs are responsible for ensuring that personnel in their organizations understand the corporate and contract-specific QC programs and that their organizations' functions are set up and maintained effectively.

Quality issues are resolved at the lowest possible organizational level at each project site, to enable timely corrective action development and implementation. Issues that cannot be satisfactorily resolved at the project level are elevated to and resolved at the corporate level.

Attachment 1 shows APTIM's project organization chart, including QC personnel. The organization chart illustrates the reporting and communication relationships between QC personnel, the APTIM field team, subcontractors, and Navy representatives. This structure provides the organizational freedom for personnel to identify and evaluate quality problems and discrepancies, provide recommended solutions, and ensure that appropriate corrective actions are taken.

Attachment 2 outlines specific responsibilities and qualifications associated with each QC-related position. Attachments 3 and 4 summarize the qualifications and experience of the proposed key appointees for this project.

2.1 Quality Control Personnel and Qualifications

Key QC personnel for APTIM projects are assigned on the basis of appropriate experience and the determination that these individuals meet the contract and CTO-specific requirements. The Program QC Manager appoints the Project QC Manager and Alternate Project QC Manager. The following subsections identify the QC team for this CTO and highlight their responsibilities. Attachments 3 and 4 include copies of appointees' letters of designation.

2.1.1 Project Quality Control Manager

The Project QC Manager, who reports directly to the Program QC Manager, will work closely with the PM, Site Safety and Health Officer, Radiation Safety Officer, Radiation Control Supervisor, and Navy QC representatives to assure that the work is performed in compliance with the specifications contained in the approved work plan.

The Project QC Manager(s) assists and represents the QC Program Manager in continued implementation and enforcement of the approved plans. The Project QC Manager will manage the site-specific QC requirements in accordance with project plans.

The Project QC Manager has the authority to stop work if contract requirements are not being met. Attachment 2 lists the Project QC Manager's responsibilities. In the event the Project QC Manager is unavailable, an Alternate Project QC Manager will assume this responsibility.

2.1.2 Alternate Project Quality Control Manager

In the event the Project QC Manager is unavailable, an Alternate Project QC Manager will assume the QC responsibilities, as outlined in Attachment 2 and described in this CQC plan. Attachment 4 identifies the Alternate Project QC Managers designated for this project. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year and tracked in daily reports. The qualification requirements for the Alternate Project QC Manager must be the same as for the QC Manager. The Alternate Project QC Manager must have a minimum of two years of experience as full-time QC Manager, or a combination of three to ten years of experience as full-time Site Superintendent or PM.

2.2 Quality Control Directives

The applicable QCDs are available as uncontrolled in the *Corporate Construction Quality Management Plan, Environmental Multiple Award Contract for Remediation of Radiological Contaminants (RADMAC II)* (CB&I Federal Services LLC, 2017b). The following QCDs apply to this CTO:

- QCD 1.0, "Project Quality Control Personnel Duties, Qualifications, and Authority"
- QCD 2.0, "Project Quality Control Plans"
- QCD 3.0, "Design Review"
- QCD 4.0, "Coordination and Mutual Understanding Meeting"
- QCD 5.0, "Project Quality Control Meetings"
- QCD 6.0, "Submittals"
- QCD 7.0, "Documentation"
- QCD 8.0, "Quality Control Certifications"
- QCD 9.0, "Three Phases of Control"
- QCD 10.0, "Completion Inspections"
- QCD 11.0, "Testing"
- QCD 12.0, "Corrective Action Requests and Non-compliance"
- QCD 13.0, "Rework"
- QCD 14.0, "Change Control"
- QCD 15.0, "Organization and Personnel Certifications Log"

- QCD 16.0, “Field Startup”
- QCD 17.0, “PM Turnover”
- QCD 18.0, “Training”
- QCD 19.0 “Quality Audits”
- QCD 21.0 “Quality Control for Geophysical Surveys”
- QCD 22.0 “Technical Publications”
- QCD 23.0 “Environmental Records Program”
- QCD 24.0 "Tablets"

QCDs 1.0 through 23.0 are provided in the *Final Corporate Quality Management Plan, Contract N62473 17 D 0006, Environmental Multiple Award Contract for Remediation of Radiological Contaminants (RADMAC II)* (CB&I Federal Services LLC, 2017a). QCD 24.0 and is included as Attachment 10.

2.3 APTIM Quality Procedures

The following APTIM quality procedures that are part of the AMS (APTIM, 2019), as well as legacy policies, apply to this CTO. If additional project-specific quality procedures are required, these procedures will be inserted into Attachment 10.

- AMS-720-01-PR-00130, “Quality Management Organization”
- EIP-Q-002, “Stop Work Notice for Quality Related Issues”
- AMS-720-01-PR-00120, “Project Quality Plans” (supersedes EIG-Q-003, “Project Quality Plan”)
- AMS-720-02-PR-00480, “Receiving Inspection” (supersedes EIP-Q-004, “Receipt Inspection”)
- AMS-720-01-PR-00230, “Construction Inspection Program” (supersedes EIP-Q-005, “Inspection”)
- AMS-720-01-PR-00290, “Inspection and Test Plans” (supersedes EIP-Q-005, “Inspection” and EIP-Q-016, “Test Control”)
- AMS-720-01-GL-00230, “Guidelines for Quality Surveillance Activities” (supersedes EIP-Q-006, “Surveillance”)
- AMS-720-01-PR-00150, “Identification, Control, and Disposition of Nonconforming Product” (supersedes EIG-Q-007, “Nonconformance Reporting”)
- AMS-720-01-PR-00170, “Corrective and Preventive Action” (supersedes EIG-Q-008, “Corrective Action”)
- AMS-720-01-PR-00220, “Internal Audit Procedure” (supersedes EIG-Q-009, “Quality Audits”)

- AMS-720-01-GL-00223, "Qualification and Assessment of Internal Audit Personnel" (supersedes EIP-Q-010, "Auditor and Lead Auditor Qualification Program")
- EIP-Q-014, "Management Assessment" (no current AMS equivalent)
- EIG-Q-015, "Quality Councils" (no current AMS equivalent)

Note: QCDs take precedence over these procedures

3.0 SUBMITTALS, SUBCONTRACTORS, AND TESTING

The following subsections discuss project submittals, subcontractors, and testing.

3.1 Project Submittals

APTIM will manage submittals, as required by contract. The Project QC Manager will review and approve items prior to submittal. The Project QC Manager may utilize the assigned QC Specialist (Refer to the assigned "DFOW Task Lead" on the DFOW Matrix) to obtain, review and approve DFOW submittals prior to Project QC Manager review and approval. The Project QC Manager will certify that submittals are in compliance with contract requirements and track the status of this documentation in the submittal register (Attachment 6). The Project Radiation Safety Officer or designee will review radiological data prior to submittal. QCD 6.0 further discusses submittals.

3.2 External Organizations

To manage subcontractors and vendors effectively, APTIM carefully selects and prequalifies each firm, which ensures that subcontractors bring the same focus on quality, cost control, schedule discipline, and commitment to customer satisfaction as APTIM. Once an award is made to a subcontractor, APTIM manages the quality of the subcontractor's performance through the three-phase inspection process. Subcontractors will be subject to APTIM QC procedures. Attachment 5 summarizes names and qualifications of subcontractors proposed for this project.

The Project QC Manager will provide the following information for each independent testing laboratory to the government for review and approval prior to testing:

- Functional description of lab's organizational structure.
- List and resume of testing lab personnel.
- Affidavit of compliance with applicable ASTM International publications and certification that all lab work will be performed in accordance with contract technical specifications.
- List of inspection equipment corresponding to each test noted in the testing log and equipment calibration certificate.
- Certification from a nationally recognized agency.
- Affidavits for special inspections must be submitted to the Contracting Officer (KO) before progress payments for the work are approved.

3.3 Testing Procedures

In addition to implementing the three phases of the control system to ensure the overall quality of each definable feature of work (DFOW), APTIM will make use of formal testing procedures where applicable

(including tests performed by subcontractors and/or off-site laboratories) to ensure conformance to applicable specifications and verify that control measures are adequate to provide a finished product, which conforms to contract requirements.

3.4 Testing Plan and Log

The Project QC Manager will use the testing plan and log (Attachment 7) to manage project testing. The Project QC Manager will attach a copy of the updated log to the last daily contractor QC report of each month. Chemical sampling and analyses are normally not included in the log, since the sampling and analysis plan (Appendix A) implements these requirements.

3.5 Backfill and Site Restoration

The PM and Project QC Manager must receive authorization from Base Realignment and Closure and Radiological Affairs Support Office to backfill a former trench. After receiving authorization, APTIM will backfill and compact the trench in preparation for site restoration. Material that has been screened and cleared by the soil sorting system will be used as backfill. Material that was excavated and processed through the soil sorting system will be tracked and returned to the approximate trench location it was initially excavated from. Should not enough backfill material be available from screened and cleared excavated material, APTIM will utilize imported backfill material from an outside source that meets former Hunters Point Naval Shipyard and clean imported backfill criteria for chemicals of concern and radionuclides of concern prior to use. APTIM will place crushed rock in trenches extending below the water table to meet compaction criteria.

Trench compaction will require, at a minimum, 95 percent compaction for each layer/lift of backfill within 3 feet of pavement subgrade, or adjacent ground. For areas below 3 feet of pavement subgrade, a relative compaction of 90 percent or more is required. Compaction testing will be in accordance with ASTM International 1557, as shown on the testing plan and log (Attachment 7). A proctor test is required for maximum dry density and optimum moisture content for each batch/source of backfill material. A minimum of one compaction test will be conducted per every 50 feet of trench for both the 90 percent and 95 percent soil criteria. Additional samples may be requested by Navy field engineers. Following radiological processing per Work Plan Section 3.5.1, asphalt may be crushed and reused to augment backfill material above the water table and below 1 foot below ground surface. Asphalt will be crushed to 6 inches minus in accordance with the maximum loose lift thickness specified in the *Final Deisgn Basis Report, Parcels UC-1 and UC-2, Hunters Point Shipyard, San Francisco, California* (ChaduxTt, A Joint Venture of St. George Chadux Corp. and Tetra Tech EM Inc., 2010) (Specification Paragraph No. 31 00 0) within or directly adjacent to the trench where it was placed. The performance work statement estimates total backfill volume at 66,000 bank cubic yards. APTIM will subcontract testing requirements and specifications required by the performance work statement and remedial design package to a geotechnical engineering firm, who will provide oversight and testing.

3.6 Testing and Documentation

APTIM will submit test reports containing test results to the KO and/or Contracting Officer Representative (COR) as required by the contract. Test reports will cite applicable contract requirements, tests or analytical procedures used, and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, APTIM will notify the KO and/or COR immediately. APTIM will submit the signed test reports, certifications, and other documentation to the KO and/or COR via the Project QC Manager.

4.0 REWORK ITEMS, NON-COMPLIANCES, AND CORRECTIVE ACTION REQUESTS

The Project QC Manager will review any instances where materials, equipment, or activities fail to meet the specified requirements and will take appropriate action to prevent future occurrences.

4.1 Rework

A rework item is work that does not comply with the contract. There is no requirement to report a rework item that is corrected the same day it is discovered. APTIM and subcontractor personnel will be responsible for identifying rework items and reporting them to the Project QC Manager. The Project QC Manager will coordinate with the Project Superintendent to ensure rework items are corrected in a timely manner. The Project QC Manager will maintain a rework items list of work that does not comply with the contract, including those identified by the KO or his/her representative. The Project QC Manager will report identified and corrected items in the daily contractor QC report and during project QC meetings and will attach a copy of the rework items list to the last daily contractor QC report of each month. QCD 13.0 further discusses rework items.

4.2 Non-Compliances

The KO may also notify APTIM of any detected non-compliance with the contract. APTIM will take immediate corrective action after receipt of such notice. Such notice, when delivered to APTIM at the work site, will be deemed sufficient for the purpose of notification. QCD 12.0 further discusses non-compliances.

4.3 Corrective Action Requests

APTIM will identify, track, and correct items, processes, and services that do not meet established requirements. Correction will focus on determining the cause of the deficiency and corrective actions to be taken to rectify the deficiency and prevent recurrence. QCD 12.0 further discusses corrective action requests.

4.4 Procedures for Tracking Laboratory Deficiencies

Laboratory testing requirements for radiological analyses and procedures for identifying and managing any deficiencies are addressed under the sampling and analysis plan (Appendix A).

5.0 DOCUMENTATION

A variety of documents will be developed at specified points or intervals during the course of this project to support the QC process. These items will be submitted to the government or maintained by APTIM and made available for review, as required. QC-related project documentation may include the following:

- Testing plan and log
- Daily CQC reports
- Three-phase control inspection checklists (preparatory, initial, and follow-up)
- QC meeting minutes
- Rework items list
- Non-compliance/corrective action reports
- As-built drawings
- Material receipt inspections

QCD 7.0 further discusses documentation.

5.1 Daily Reports

APTIM will submit reports for each day that work is performed, as required by the contract. Reports will be attached to the daily contractor QC report. Reports may also be submitted on a weekly basis depending on the nature of work and with approval from the Navy. The reporting of work will be identified by terminology consistent with the construction schedule. The “remarks” section of reports will include the following:

- Directions received
- Construction deficiencies and problems
- QC problems
- Deviations from project plans
- Conflicts or errors in the drawings or specifications
- Field changes
- Instructions given and corrective actions taken
- Work progress and delays
- Safety hazards

- Meetings held
- Visitors to the work site

5.1.1 Daily Contractor Quality Control Report

The Project QC Manager is responsible for preparing and signing the daily contractor QC report. Other QC, production, and health and safety documents may be attached to the daily contractor QC report. The Project QC Manager will submit the report to the Navy the next working day after each day work is performed and for every seven consecutive calendar days of no-work.

5.1.2 Daily Contractor Production Report

The Project Superintendent or designee is responsible for preparing and signing the daily contractor production report. The report will be attached to the daily contractor QC report.

5.1.3 Quality Control Specialist Report

If a QC specialist is assigned, he/she will prepare, sign, and date a report for each day that work is performed in his/her area of responsibility. The report will include the same documentation requirements as are submitted with the daily contractor QC report and will supplement the daily contractor QC report package prepared by the Project QC Manager.

5.2 Quality Control Meeting Minutes

After the start of construction, the Project QC Manager will commence holding weekly QC meetings with the Site Superintendent, QC staff, and Site Safety and Health Officer. QCD 5.0 describes the project procedure based on Unified Facilities Guide Specifications 01 45 00.00 20. The Navy Remedial Project Manager/COR, Caretaker Site Office, Resident Officer in Charge of Construction, and Radiological Affairs Support Office may also attend these meetings, as required.

At a minimum, the following will be accomplished at each QC meeting as needed:

- Review the minutes of the previous meeting
- Review the schedule and status of work, inspections, testing, rework, and submittals
- Review the work, inspections, and testing to be accomplished in the next two weeks and documentation required
- Resolve QC, production, and safety concerns
- Address items that may require revising the project plans
- Review the accident prevention plan and/or activity hazard analyses as necessary
- Review environmental requirements and procedures as necessary
- Review the following, as applicable:

- Waste management plan
- Radiological protection plan
- Environmental protection plan
- Status of training completion and progress

The Project QC Manager will prepare the minutes of the meetings and provide a copy to the COR within two working days after the meeting.

5.3 Quality Control Validation

APTIM will maintain files of original documents, including project documents, in a home office. Copies of project documents will also be filed in the field office. Project files include, but are not limited to, inspection reports and checklists, testing plan and log, rework items list, and punch lists.

5.4 As-Built Drawings

The Project QC Manager will ensure the as-built drawings are kept current on a daily basis and marked to show deviations from the contract drawings identified with the appropriate modifying documentation. The Project QC Manager or QC specialist assigned to that area of responsibility will initial each revision. The required full-size set of marked up contract drawings will be maintained on site and updated monthly. Upon completion of work, the Project QC Manager will certify the drawings, attesting to their accuracy, and ensure that they are submitted to the KO per QCD 8.0.

6.0 DEFINABLE FEATURES OF WORK

A DFOW is a representative portion of work that is separate and distinct from any other stage of work. Nineteen DFOWs have been identified for this project (Attachment 8) and are further described in the work plan. Activities associated with the project will be conducted in accordance with the following documents for this project, which provide specific methods and requirements for implementation of the DFOWs:

- Work plan
- Sampling and analysis plan (Appendix A)
- *Final Accident Prevention Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California* (APP/SSHP; APTIM, 2019b)
- *Final Radiation Protection Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California* (APTIM, 2019a)

The DFOWs for this radiological removal activities (Attachment 8) include the following:

- DFOW 1, “Mobilization and Demobilization”
- DFOW 2, “Utility Survey”
- DFOW 3, “Maintenance of BMPs”
- DFOW 4, “Temporary Construction Facilities”
- DFOW 5, “Site Maintenance”
- DFOW 6, “Site Security Services”
- DFOW 7, “Air Monitoring”
- DFOW 8, “Radiological Control and Support”
- DFOW 9, “Traffic Control”
- DFOW 10, “Waste T&D Coordination with Navy’s Waste Broker”
- DFOW 11, “Phase 1 – Former SS/SD Line Excavations”
- DFOW 12, “Phase 2 – Former SS/SD Line Drilling and Sampling”
- DFOW 13, “Soil Investigation – Fisher and Spear Streets”
- DFOW 14, “Building 813 and 819 Surveys”

- DFOW 15, “Excavated Soil Characterization and Management”
- DFOW 16, “Final Status Surveys”
- DFOW 17, “NORM and Background Evaluation”
- DFOW 18, “Backfill and Restore Site Conditions”
- DFOW 19, “Waste Management and Hauling”

7.0 THREE PHASES OF CONTROL

The Project QC Manager manages the three phases of control to adequately cover both on-site and off-site work with the three phases of control and include the following (Preparatory, Initial, and Follow-Up Phase) for each DFOW. The only duties and responsibilities of the Project QC Manager are to manage and implement the QC program on this contract. The Project QC Manager may assign the task leader to provide QC support for DFOWs, including the project engineer, project geologist, Project Superintendent, QC specialist, etc; however, the Project QC Manager or Alternate Project QC Manager, retain overall QC responsibility for inspecting DFOWs in accordance with the performance work statement, contract plans, and specifications.

The QC Manager will maintain the project organization and personnel certification log (QCD 15.0), which identifies personnel who are approved to perform the following based on applicable specification sections:

- Review and approval of submittals
- Perform and document the three phases of control
- Perform and document the testing
- Performing punch-out, pre-final, and final inspections

7.1 Preparatory Phase

The Project QC Manager will notify the CO and/or COR, as applicable at least two work days, two weeks for off-site work, in advance of each preparatory phase meeting. Battelle and CES are anticipated to provide Tier 2 QA support to the Navy and will be included in the three phases of control by the Project QC Manager, and the Project QC Manager will maintain primary QA/QC responsibilities. For example, the Project QC Manager will notify the Battelle QA for DFOWs involving radiological surveys for field coordination of QA inspections and approvals. The assigned lead (QC specialist) shown on the project DFOW matrix will conduct a pre-preparatory meeting telecon with subcontractors two weeks prior to the preparatory meeting. The purpose is to assess the status of DFOW requirements, such as submittals required by applicable specifications. Minutes of the pre-preparatory meeting telecon will be emailed to participants including the Project QC Manager and PM. The assigned lead will track the completion of submittals and action items leading to the preparatory meeting. At a minimum the Project QC Manager, technical lead, Project Superintendent, foreman, and Site Safety and Health Officer will attend. When a subcontractor will perform work, that subcontractor's superintendent will attend.

7.1.1 Preparatory Phase Activities

The following will occur during the preparatory phase:

- Review each paragraph of the applicable specification sections.
- Review the contract drawings.
- Verify that field measurements are as indicated on construction and/or shop drawings before confirming product orders, in order to minimize waste due to excessive materials.
- Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required.
- Review the testing plan and log and ensure that provisions have been made to provide the required QC testing.
- Examine the work area to ensure that the required preliminary work has been completed.
- Coordinate the schedule of product delivery to designated areas.
- Examine the required materials, equipment, and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data.
- Discuss construction methods, construction tolerances, workmanship standards, and the contractor's quality approach.
- Review the APP/SSHP (APTIM; 2019b) and appropriate activity hazard analyses to ensure that applicable safety requirements are met and that required material safety data sheets are submitted.

Additionally, APTIM will coordinate with the Navy on waste T&D involving the Navy's waste broker. This process coordination is described in performance work statement Section 2.3.10.

APTIM will coordinate a pre-transport inspection based on the applicability of requirements shown on the checklist. These checks will verify the T&D subcontractor hired by the waste broker has a valid California Department of Toxic Substances Control Hazardous Waste Transporter Registration, U.S. Environmental Protection Agency ID No., and other applicable requirements determined by the Navy and Radiological Affairs Support Office on the following checklist:

_____ _____
Transporter Manifest #

Pre-Transport Inspection Checklist

Hazardous Waste Transporter Requirements

_____ Driver holds a valid appropriate CDL with /Hazardous Material Endorsement
_____ Driver holds current Medical Card
_____ Proof of Insurance
_____ Valid Vehicle Registration(s)
_____ Valid CA DMV Motor Carrier Permit[3]
_____ Valid DTSC Hazardous Waste Transporter Registration
_____ Valid DOT Hazardous Materials Certificate of Registration[1]
_____ DOT Safety Permit[2]
_____ Uniform Hazardous Waste Manifest properly completed
_____ Appropriate EPA ID#s on manifest
_____ Emergency Response information available:
24/7 in transit telephone number on manifest; and ERG or equivalent
_____ 2-way communication
_____ Load properly segregated and secured
_____ Waste containers are properly closed, marked and labeled
_____ Vehicle properly marked and/or placarded if required
_____ Vehicle cargo area was locked upon arrival and at departure
_____ Vehicle and any attached equipment in sound condition

_____ _____
Inspected by (Print name) Date

1 A Security Plan and a DOT Hazardous Materials Certificate of Registration is required for more than one liter per package of PIH material; a bulk package >3,500 gallons for liquids or 468 cubic feet for solids; a shipment other than bulk packaging of 5,000 pounds or more of one hazard class of material requiring placards; or a quantity of hazardous materials requiring placards.

[2] A DOT Safety Permit is required for: Route-controlled quantities of Class 7 materials; 55 pounds of Division 1.1, 1.2.1.3 explosives and 1.5 requiring a placard; 1 liter (1.08 quart) of TIH materials in Hazard Zone A, Hazard Zone B materials in a bulk package (= to or >119-gallons), Hazard Zone C & D materials in a packaging having a capacity of 3,500-gallons and for Methane Compressed or Refrigerated Liquefied Methane or Liquefied Natural Gas or other Liquefied Gas with a methane content of at least 85% in a bulk packaging having a capacity = to or > 3,500-gallons for liquids or gasses.

[3] Vehicles which are exempt from vehicle registration fees [Unified Carrier Registration (UCR)] do not need the MCP if only making one pick-up of property in California.

Results of the preparatory phase will be documented in the preparatory report and attached to the daily contractor QC report.

7.2 Initial Phase

The Project QC Manager will notify the KO and/or COR at least two workdays, two weeks for off-site work, in advance of each initial phase. The assigned lead shown on the project DFOW matrix will perform the initial phase and he/she will observe the initial segment of the DFOW to ensure that the work complies with contract requirements. Results of the initial phase will be documented in the inspection report and attached to the daily contractor QC report. The following will be performed:

- Establish the quality of workmanship required
- Resolve conflicts
- Ensure that testing is performed by the approved laboratory
- Check work procedures for compliance with the APP/SSHP (APTIM; 2019b) and the appropriate activity hazard

7.3 Follow-up Phase

The assigned lead shown on the project DFOW matrix will perform the follow-up phase for ongoing work daily, or more frequently as necessary, until the completion of the work. Results of the follow-up phase will be documented in the Inspection Report and attached to the daily contractor QC report. The following will be performed:

- Ensure the work is in compliance with contract requirements
- Maintain the quality of workmanship required
- Ensure that testing is performed by the approved laboratory
- Ensure that rework items are being corrected
- Perform safety inspections

7.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases will be conducted for a deficiency if the following occur:

- The quality of ongoing work remains or becomes unacceptable
- There are changes in the applicable QC organization; there are changes in the on-site production supervision or work crew
- Work is resumed after substantial period of inactivity
- Other problems develop

QCD 9.0 further discusses the three phases of control.

8.0 COMPLETION INSPECTIONS

Near completion of DFOW requirements (i.e., before the subcontractor demobilizes from the site), the Project QC Manager will coordinate a completion inspection process to verify that DFOW requirements are met: punch-out inspection, pre-final inspection, and final acceptance inspection. Required participants include the DFOW lead, Construction QA Manager (or designee), Navy Resident Officer in Charge of Construction, and subcontractor lead (for subcontracted work). This process is required to document DFOW closeout.

8.1 Punch-Out Inspection

The Project QC Manager will manage completion inspections. Near the completion of work or to verify that statement of objectives or performance work statements are met, the Project QC Manager and DFOW lead will ensure work is inspected and a punch list developed. Punch list items include items that do not conform to the approved drawings, specifications and contract, and remaining rework items. The punch list will indicate the estimated correction dates of these items. The Project QC Manager will ensure corrected items are verified. Once this is accomplished, the Project QC Manager will schedule a pre-final inspection.

8.2 Pre-Final Inspection

The Navy will perform a pre-final inspection to verify that DFOW contract requirements are met for completed fieldwork. A Navy punch list may be developed as a result of this inspection. The Project QC Manager and DFOW lead will ensure that the items on this list are corrected prior to notifying the Navy to schedule a final acceptance inspection. Items noted during the preliminary-final inspection must be corrected in a timely manner and be accomplished before the contract completion date for the work.

8.3 Final Acceptance Inspection

If required by contract, the Project QC Manager will notify the KO and/or COR at least 14 calendar days prior to the date a final acceptance inspection can be held, stating that items previously identified during the pre-final will be corrected and acceptable, along with any other unfinished contract work, by the date of the inspection. The Project QC Manager, Project Superintendent, and others deemed necessary will be present during the inspection with the Navy. If deficiencies remain or are identified during the inspection, the parties will agree on a course of action. QCD 10.0 further discuses completion inspections.

8.4 Inspection Documentation

In accordance with QCD 7.0, the Project QC Manager will maintain inspection records.

9.0 REFERENCES

Aptim Federal Services, LLC (APTIM), 2019a, *Final Radiation Protection Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California.*

APTIM, 2019b, *Final Accident Prevention Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California.*

APTIM, 2020, *APTIM Management System*.

CB&I Federal Services LLC, 2017a, *Final Corporate Quality Management Plan, Contract N62473-17-D-0006, Environmental Multiple Award Contract for Remediation of Radiological Contaminants (RADMAC II)*, May.

CB&I Federal Services LLC, 2017b, *Corporate Construction Quality Management Plan, Environmental Multiple Award Contract for Remediation of Radiological Contaminants (RADMAC II)*.

Attachment 1
Quality Control Organization Chart

Attachment 2
Project Quality Control Duties and Responsibilities

Project Quality Control Duties and Responsibilities

Duty	Responsibility	QCD
Pre-Construction Phase		
Establish Personnel Requirements	PM	1.0
Review Personnel Resumes	PM	1.0
Assign Duties	PM	1.0, 2.0
Prepare Organization Chart	PQCM	1.0, 2.0
Prepare Letters of Designation	PQCM	1.0, 2.0
Review Plans and Designs	PM, PQCM	3.0, 7.0
Identify Subcontractors	PM	1.0, 2.0
Submit Laboratory Information	PQCM	1.0, 2.0
Attend Training	all	1.0
Prepare Submittal Register	PQCM	2.0, 6.0
Prepare Definable Features of Work Matrix	PQCM	2.0, 9.0
Prepare Testing Plan and Log	PQCM	2.0, 11.0
Prepare Rework Items List	PQCM	2.0, 13.0
Assemble Forms	PQCM	2.0
Assemble Personnel Certifications	PQCM	8.0, 15.0
Conduct Coordination and Mutual Understanding Meeting	PQCM	4.0
Construction Phase		
Ensure Construction Quality	PM	1.0, 14.0, 16.0, 17.0
Review Definable Features of Work	PQCM	9.0
Ensure Submittals Approved and Submitted	PQCM	3.0, 6.0, 7.0
Conduct Project QC Meetings	PQCM	5.0
Conduct Preparatory Meetings	PQCM	9.0
Conduct Preparatory Inspections	PQCM	9.0
Conduct Initial Inspections	PQCM	9.0
Conduct Follow-Up Inspections	PQCM	9.0
Conduct Completion Inspections	PQCM	10.0
Manage Corrective Action Requests	PQCM	12.0
Manage Rework Items	PQCM	13.0
Provide QC Certifications	PQCM	8.0

Notes:

The PQCM may assign the lead for inspections to the other project personnel: Task Lead, Project Site Superintendent, etc.

PM	*project manager*
PQCM	*project quality control manager*
QC	*quality control*
QCD	*quality control directive*

Attachment 3
Project Quality Control Manager Letter of Designation

Project Construction Quality Control Manager
Letter of Designation

Parcels D-2, UC-1, UC-2, and UC-3
Radiological Confirmation Sampling and Survey
Former Hunters Point Naval Shipyard
San Francisco, California
Contract Number N62473-17-D-0006; Contract Task Order N6247317F5345

March 2020

Mr. Lee Laws:

This letter will serve to assign you as the Aptim Federal Services, LLC Project Quality Control (QC) Manager for the above-captioned contract task order. In this capacity, you will report directly to me and will administer the established requirements of the contract and Project QC Plan. In the case where you are not able to perform the Project QC Manager's duties, Mr. Michael Lightner, Mr. Kevin O'Leary, and/or Ms. Amy Mangel will serve as your Alternate Project QC Manager. You will manage the three phases of control. You are authorized to stop work that is not in accordance with the contract and will exercise this authority consistent with Aptim Federal Services, LLC policies and procedures. You are authorized to approve submittals that have been certified by qualified submittal reviewers as identified in the organization chart for this task order and as necessary to ensure the quality of the work and direct the removal and/or replacement of nonconforming materials or work.

Your Construction Quality Management certificate and resume are classified as Personal Identifiable Information and not included in the Project QC Plan. These records will be furnished to the government upon request.

If you have questions or require additional information, please contact me at 415 572 1814.

Sincerely,
Aptim Federal Services, LLC

Kevin Hoch
Program QC Manager

Attachment 4
Alternate Project Quality Control Manager
Letter of Designation

Alternate Project Construction Quality Control Manager
Letter of Designation

Parcels D-2, UC-1, UC-2, and UC-3
Radiological Confirmation Sampling and Survey
Former Hunters Point Naval Shipyard
San Francisco, California
Contract Number N62473-17-D-0006; Contract Task Order N6247317F5345

March 2020

Mr. Michael Lightner, Mr. Kevin O'Leary, and/or Ms. Amy Mangel:

This letter will serve to assign you as Aptim Federal Services, LLC Alternate Project Quality Control (QC) Manager for the above-captioned contract task order. In the case where the designated Project QC Manager, Mr. Lee Laws is unable to perform the Project QC Manager's duties, you will serve in that capacity with his responsibilities and authorities, report directly to me, and administer the established requirements of the contract and Project QC Plan. You will manage the three phases of control. You are authorized to stop work that is not in accordance with the contract and will exercise this authority consistent with Aptim Federal Services, LLC policies and procedures. You are granted the authority to approve submittals that have been certified by qualified submittal reviewers as identified in the organization chart for this task order and as necessary to ensure the quality of the work and direct the removal and/or replacement of nonconforming materials or work. You are authorized to act as an alternate for two weeks at one time and not more than 30 workdays during a calendar year. In the case where it is believed that these time periods will be exceeded, you must notify me.

Your Construction Quality Management certificates and resumes are classified as Personal Identifiable Information and not included in the Project QC Plan. These records will be furnished to the government upon request.

If you have questions or require additional information, please contact me at 415 572 1814.

Sincerely,
Aptim Federal Services, LLC

Kevin Hoch
Program QC Manager

Attachment 5
Outside Organizations

Outside Organizations

Organization Name/Address/Phone	Description of Services
TBD	Asphalt repair
TBD	Analytical laboratory services
TBD	Air monitoring analytical services
TBD	Drilling
TBD	Waste transportation and disposal
TBD	Heavy equipment rental
TBD	Utility location
TBD	Geotechnical testing
TBD	Temporary facilities
TBD	Data validation
ISO-Pacific	Soil sorter

Notes:
TBD *to be determined*

Attachment 6
Submittal Register

Attachment 7
Testing Plan and Log

Testing Plan and Log

Contract No. N62473-17-D-0006 Contract Task Order N6247318F5345			Parcels D-2, UC-1, UC-2, and UC-3, Former Hunters Point Naval Shipyard, San Francisco, California							Contractor APTIM	
Specification Section and Paragraph Number	Test Procedure	Test Name	Accredited/ Approved Laboratory		Sampled By	Location of Test		Frequency of Test	Date Completed	Date Forwarded to Contracting Officer	Remarks
			Yes	No		On Site	Off Site				
31 00 00	California Test 301	R Value					X	1/source			fill under asphalt
31 00 00	ASTM D 422	Grain Size					X	1/2,000 cuyd			fill
31 00 00	ASTM D 4318	Atterberg Limits					X	1/2,000 cuyd			fill
31 00 00	ASTM D 698	Compaction					X	1/5,200 cuyd			fill
31 00 00	ASTM 2487	Classification					X	1/2,000 cuyd			fill
31 00 00	ASTM D 2216	Moisture				X		1/2,000 cuyd			fill
31 00 00	ASTM D 6938	Density & Moisture				X		1/10,000 sf/lift			Fill/subgrade
31 00 00	ASTM D 1556	Density, Sand Cone				X		1/150,000 sf/lift			Subgrade (minimum one per day)
31 00 00	ASTM D 2216 (with cor. to Nuclear gauge D 6938)	Moisture				X		1/150,000 sf/lift			Subgrade (minimum one per day)
31 00 00	Modified Proctor ASTM D 1557	Compaction Curves					X	1/5,000 cuyd or change in material			fill
32 10 00	ASTM D 2922	Density				X		1/10,000 sf/lift			AB
32 10 00	ASTM D 3017	Moisture					X	1/source			AB
32 10 00	ASTM D 2172	Extraction				X		2/day/mix			bituminous mix
32 10 00	AASHTO T 30	SieveF				X		2/day/mix			bituminous mix
32 10 00	ASTM D 1559	Stability and Flow				X		2/day/mix			bituminous mix

Contract No. N62473-17-D-0006 Contract Task Order N6247318F5345			Parcels D-2, UC-1, UC-2, and UC-3, Former Hunters Point Naval Shipyard, San Francisco, California							Contractor APTIM	
Specification Section and Paragraph Number	Test Procedure	Test Name	Accredited/ Approved Laboratory		Sampled By	Location of Test		Frequency of Test	Date Completed	Date Forwarded to Contracting Officer	Remarks
			Yes	No		On Site	Off Site				
32 10 00	AASHTO T 230	Density					X	3 cores/200 tons			pavement
32 10 00	Per Section 3.3.2.2c of spec	Straightedge Test				X					

Notes:

AASHTO	*American Association of State and Highway Transportation Officials*
AB	*aggregate base*
APTIM	*Aptim Federal Services, LLC*
ASTM	*ASTM International*
cuyd	*cubic yards per day*
sf	*square foot*

Attachment 8
Definable Features of Work Matrix

Definable Features of Work Matrix
Contractor Quality Control Plan
Parcels D-2, UC-1, UC-2, UC-3, Radiological Confirmation Sampling and Survey
Hunters Point Naval Shipyard, San Francisco, California
Contract Number N62473-17-D-0006; Contract Task Order N6247318F5345

Plan/ Specification Section	Schedule Cross Reference	Feature of Work	Task Lead	Preparatory	Initial	Follow-Up	Completion
WP/3.6.2, 3.6.8	W.E.3	Mobilization and Demobilization	Norm Hanelt	Kevin Hoch	Lee Laws Norm Hanelt	Lee Laws	Lee Laws Norm Hanelt
WP/3.6.2, 3.6.8	W.E.3	Utility Survey	Michael Lightner	Kevin Hoch	Lee Laws Michael Lightner	Lee Laws	Lee Laws Michael Lightner
WP/SWMP	W.E.3	Maintenance of BMPs	Norm Hanelt	Kevin Hoch	Lee Laws Norm Hanelt	Lee Laws	Lee Laws Norm Hanelt
WP/3.6.2	W.E.3	Temporary Construction Facilities	Norm Hanelt	Kevin Hoch	Lee Laws Norm Hanelt	Lee Laws	Lee Laws Norm Hanelt
WP	W.E.3	Site Maintenance	Norm Hanelt	Kevin Hoch	Lee Laws Norm Hanelt	Lee Laws	Lee Laws Norm Hanelt
WP	W.E.3	Site Security Features	Eddie Kalombo	Kevin Hoch	Lee Laws Eddie Kalombo	Lee Laws	Lee Laws Eddie Kalombo
WP/8.5.2	W.E.3	Air Monitoring	Eddie Kalombo	Kevin Hoch	Lee Laws Eddie Kalombo	Lee Laws	Lee Laws Eddie Kalombo
WP/3.4, 3.5, 3.6, 4, 6, 7.2,	W.E.3	Radiological Control and Support	Randall Killpack	Kevin Hoch	Lee Laws Randall Killpack	Lee Laws	Lee Laws Randall Killpack
TCP	W.E.3	Traffic Control	Norm Hanelt	Kevin Hoch	Lee Laws Norm Hanelt	Lee Laws	Lee Laws Norm Hanelt
WP/2.3.10	W.E.3	Waste T&D Coordination with Navy's Waste Broker	TBD by Navy	Kevin Hoch	TBD by Navy	TBD by Navy	TBD by Navy
WP/3.6.3, 3.6.5.1	W.E.3	Phase 1—Former SS/SD Line Excavations	Norm Hanelt	Kevin Hoch	Lee Laws Norm Hanelt	Lee Laws	Lee Laws Norm Hanelt
WP/3.6.4, 3.6.5.2	W.E.3	Phase 2—Former SS/SD Line Drilling and Sampling	Michael Lightner Eddie Kalombo	Kevin Hoch	Lee Laws Michael Lightner Eddie Kalombo	Lee Laws	Lee Laws Michael Lightner Eddie Kalombo

Plan/ Specification Section	Schedule Cross Reference	Feature of Work	Task Lead	Preparatory	Initial	Follow-Up	Completion
WP/3.6.6	W.E.3	Soil Investigation—Fisher and Spear Streets	Michael Lightner	Kevin Hoch	Lee Laws Michael Lightner	Lee Laws	Lee Laws Michael Lightner
WP/4	W.E.3	Building 813 and 819 Surveys	Randall Killpack	Kevin Hoch	Lee Laws	Lee Laws	Lee Laws Randall Killpack
WP/3.6.3.2	W.E.3	Excavated Soil Characterization and Management	Randall Killpack	Kevin Hoch	Lee Laws Randall Killpack	Lee Laws	Lee Laws Randall Killpack
WP/4	W.E.3	Final Status Surveys	Randall Killpack	Kevin Hoch	Lee Laws Randall Killpack	Lee Laws	Lee Laws Randall Killpack
WP/5.5, 5.6	W.E.3	NORM and Background Evaluation	Randall Killpack	Kevin Hoch	Lee Laws Randall Killpack	Lee Laws	Lee Laws Randall Killpack
WMP	W.E.3	Waste Management and Hauling	Norm Hanelt	Kevin Hoch	Lee Laws Norm Hanelt	Lee Laws	Lee Laws Norm Hanelt

Notes:

BMP	*best management practices*
SD	*storm drain*
SS	*sanitary sewer*
TBD	*to be determined*
W.E.	*work element*
WP	*work plan*

Attachment 9
Organization and Personnel Certifications

Organization and Personnel Certifications Log
Definable Features of Work Matrix
Contractor Quality Control Plan
Parcels D-2, UC-1, UC-2, and UC-3 Radiological Confirmation Sampling and Survey
Hunters Point Naval Shipyard, San Francisco, California
Contract Number N62473-17-D-0006; Contract Task Order N6247318F5345

Definable Feature of Work	Certification Requirement	Code	Organization	Individual	Verified by/Date Verified	Certificate Expires
Project Tasks	40-Hour Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response, including 8-Hour Refresher, Radiological Awareness Training	P	APTIM	(personnel)		
Lab Analysis	U.S. Department of Defense Environmental Laboratory Accreditation Program	S				

Legend:

Column 1, Definable Feature of Work: Refer to Construction Quality Control Plan table for list of definable features of work. List in order.

Column 2, Certification Requirement: State the certification required for the subcontractor, supplier, and/or individual.

Column 3, Code: S = Certificate required for the firm, that is, subcontractor or supplier; P = certificate required for the person performing the work.

Column 4, Organization: Subcontractor or supplier organization name.

Column 5, Individual: Name of certified individual (note: if certification requirement only applies to the firm, note name of person who provided certificate).

Column 6, Verified By/Date Verified: APTIM individual who verified certificates for organization and/or individuals. Verification required no later than Preparatory Inspection.

Column 7, Certificate Expires: Note the certificate expiration date.

Notes:

This log will be included in the Construction Quality Control Plan as an appendix with columns 1, 2, and 3 are filled in. Remaining columns will be completed when information becomes available.

APTIM *Aptim Federal Services, LLC*

Attachment 10
Procedures

(Procedures will be included if requirements for project-specific quality procedures arise as the project progresses)

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX E

DRAFT FINAL
DUST MANAGEMENT AND AIR MONITORING PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

March 2020

DCN: APTM-0006-5345-0012

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX E

DRAFT FINAL
DUST MANAGEMENT AND AIR MONITORING PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

March 2020

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Aptim Federal Services, LLC
4005 Port Chicago Highway, Suite 200
Concord, CA 94520

Contract Number: N62473-17-D-0006; Task Order: N6247318F5345
DCN: APTM-0006-5345-0012

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX E

DRAFT FINAL
DUST MANAGEMENT AND AIR MONITORING PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

March 2020

Nels Johnson, PE PMP
Project Manager

Date

DCN: APTM-0006-5345-0012

Table of Contents

LIST OF FIGURES ..... **II**
LIST OF TABLES ..... **II**
ACRONYMS AND ABBREVIATIONS ..... **II**
1.0 INTRODUCTION **1-1**
2.0 MANAGEMENT PRACTICES FOR CONTROL OF FUGITIVE DUYST EMISSIONS **2-1**
2.1 Potential Sources of Fugitive Dust 2-1
2.2 General Construction Dust-Control Methods 2-1
2.2.1 Construction Traffic 2-2
2.2.1.1 Track-Out Prevention 2-2
2.2.1.2 Traffic Control 2-2
2.2.2 Site Preparation 2-3
2.2.3 Material Stockpiles 2-3
2.2.4 Transport of Solid Bulk Material 2-3
2.2.5 Excavation Activities 2-4
2.2.6 Soil Processing and Management 2-4
2.2.7 Backfill Activities 2-5
2.2.8 Post-Construction Stabilization of Disturbed Areas 2-6
2.2.9 Recycling 2-6
2.2.10 Wind Speed and Air Monitoring Monitoring and Response 2-6
3.0 AIR QUALITY MONITORING PROCEDURES **3-1**
3.1 Air Quality Sampling and Real-Time Dust-Monitoring Locations 3-2
3.2 Air Quality Sample Collection and Testing Procedures 3-3
3.2.1 Total Suspended Particulates, Manganese, and Lead 3-3
3.2.2 Particulate Matter Smaller than 10 Microns in Diameter 3-4
3.2.3 Asbestos 3-4
3.2.4 Dust Real-Time Monitoring 3-5
3.2.4.1 Personnel Dust Monitoring 3-5
3.2.4.2 Dust Monitoring for Off-site Receptors 3-6
3.2.5 Radionuclides of Concern 3-7
3.3 Field Quality Control Procedures 3-8
3.3.1 Calibration Flow Rates and Maintenance 3-9
3.3.2 Sample Documentation, Custody, and Field Logs 3-9
4.0 DATA REVIEW AND REPORTING **4-1**
5.0 REFERENCES **5-1**

List of Figures

Figure 1 Air Sampling and Dust Monitoring Locations, Parcels D-2, UC-1, UC-2, and UC-3
Figure 2 Wind Rose—Parcel E
Figure 3 Wind Rose—Parcels B-1, C, and UC

List of Tables

Table 1 Dust-Monitoring and Air-Sampling Threshold Criteria
Table 2 Radionuclides of Concern Airborne Concentration Action Levels
Table 3 Air-Sampling and Dust-Monitoring Frequency and Sample Collection Methods
Table 4 Field and Laboratory Quality Control Samples
Table 5 Air-Sampling Unit Flow Checks and Controls

Acronyms and Abbreviations

APTIM	Aptim Federal Services, LLC
CFR	Code of Federal Regulations
CSAAQS	California State ambient air quality standard
DAC	derived airborne concentration
DTSC	California Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
mph	mile per hour
Navy	U.S. Department of the Navy
PDR	personal data ram
PM10	particulate matter smaller than 10 microns in diameter
QC	quality control
ROC	radionuclide of concern
TSP	total suspended particulate

1.0 INTRODUCTION

This Dust Management and Air Monitoring Plan (DMP) identifies procedures to reduce fugitive dust emissions (dust management practices), and for the air quality monitoring of fugitive dust emission that may be generated during the radiological removal activities at Parcels D-2, UC-1, UC-2, and UC-3 (the Site), Former Hunters Point Naval Shipyard, San Francisco, California (Figure 1). At the request of the U.S. Environmental Protection Agency (EPA), the U.S. Department of the Navy (Navy) has included additional dust monitoring and air sampling procedures in this DMP in order to proceed with the associated fieldwork.

Fugitive dust will be minimized and controlled during work hours, evenings, weekends, and holidays. Inactive surface areas and storage piles (defined as inactive for more than seven calendar days) will be stabilized with a chemical stabilizer. Active surface areas and storage piles (areas where material is being added or removed within seven calendar days) will be wetted with water and/or a chemical stabilizer as appropriate. At a minimum, water will be used for dust control during the week, and chemical stabilizer or equivalent will be applied to active stockpiles at the end of each workday or as needed during high winds. The dust management portion of the DMP describes measures to address the substantive requirements of the following Bay Area Air Quality Management District (BAAQMD) (2015), *Particulate Matter and Visible Emissions.*

The air quality monitoring section of the DMP will ensure on-site worker safety and provide reasonable assurance of the protection of the surrounding residents and public receptors from fugitive dust emissions that may be generated during the radiological removal activities at the Site. The nearest residential receptors are located at The San Francisco Shipyard at 11 Innes Court, approximately 150 meters north of the Site boundary. The nearest public receptors are at the University of California, San Francisco located approximately 25 meters south of the Site boundary. In addition, approximately 100 meters north of the Site, public receptors are present at a commercial kitchen and artist studios in the 100 block of Horne Avenue. The air quality monitoring is appropriate to assess potential impacts to the nearby residents and public receptors, in addition to on-site workers. The dust monitoring stations will assess potential middle scale impacts to residents and public receptors within 500 meters of the site. Three types of air monitoring will be conducted during intrusive construction activities, and while stockpiles are present and workers are on site, and include the following:

- Air quality sampling for total suspended particulates [TSP], lead, manganese, particulate matter smaller than 10 microns in diameter [PM10], and asbestos at the Site perimeter
- Real-time dust monitoring at the Site perimeter and at daily work areas
- Radionuclides of concern (ROCs) air monitoring at the Site perimeter and at daily work areas

A project sign will be installed near the site entrance or other appropriate location. The sign will include project contact information for both the Navy and Aptim Federal Services, LLC (APTIM) personnel for reporting of dust or other air quality concerns.

2.0 MANAGEMENT PRACTICES FOR CONTROL OF FUGITIVE DUYST EMISSIONS

The following subsections describe engineering controls of fugistive dust at the Site.

2.1 Potential Sources of Fugitive Dust

Planned site activities have the potential to generate air emissions in the form of fugitive dust. Possible sources of emissions include the following activities:

- Construction traffic—moving construction equipment around the construction areas is capable of creating construction emissions in work areas.
- Site preparation—removing vegetation will increase the potential for fugitive dust emissions through wind erosion.
- Excavation—removing soil from the ground and loading it either onto screening pads or into waiting vehicles could cause fugitive dust emissions.
- Transportation of solid bulk material—transporting excavated soil from excavations for radiological screening and/or disposal. Material will be reused on site to extent practicable for backfill. If soil is left uncovered, fugitive emissions could occur.
- Material stockpiles—soil that has been radiologically processed will be stockpiled prior to being used as backfill. Soil will be loaded into trucks to relocate piles on site, as necessary. Fugitive emissions during stockpiling and truck loading, as well as wind erosion, are possible.
- Subgrade preparation—cutting and placing backfill soil could cause fugitive dust emissions.
- Site restoration—backfilling and restoration of the excavated areas may produce fugitive dust emissions.
- Fugitive dust emissions generated upgradient of the site (off site) may also constitute a source.

2.2 General Construction Dust-Control Methods

Control methods for fugitive dust are described for the following emissions generated from the construction activities at the project site:

- Dust entrained during on-site travel on paved and unpaved surfaces
- Dust entrained during surface cover, excavation, material screening, backfill, and final grading at the construction site
- Dust entrained during material stockpiling, and loading and unloading operations

- Wind erosion of areas disturbed during removal activities
- Vehicle emissions associated with construction equipment
- Water applied as needed to control visible dust

The Construction Manager is ultimately responsible to identify and control visible dust; however, site personnel will be trained to recognize visible dust and report it immediately to site management. Observations will be made throughout construction, especially during earth moving activities.

2.2.1 Construction Traffic

This subsection describes dust-control methods for construction traffic.

2.2.1.1 Track-Out Prevention

Track-out of loose materials will be controlled by use of tire-cleaning rumble grid plates at the access point from the project site to the paved road to prevent track-out of mud or loose soil onto roadways. These track-out prevention-control points will be established at the primary site access point. To ensure that tires are free of mud or loose soil prior to leaving the site egress, bulk-loaded trucks and commercial vehicles will be required to pass over a gravel pad (50 feet in length) and over the rumble grid plates where the soil residue from the tires will be removed. The accumulated soil will be routinely removed and managed as waste. Visible track-out onto a paved road where vehicles exit the work site will be removed by wet sweeping.

2.2.1.2 Traffic Control

The following mitigation measures will be followed for fugitive dust emissions from construction traffic traveling on paved streets:

- Bulk-loaded trucks used for transportation of soil and other heavy earth-moving equipment will not be allowed to exit the construction sites, except through the track-out prevention-control point.
- Construction areas adjacent to and above grade from paved roadways will be treated with best management practices (Appendix E).
- Roadways within the site will be swept using a wet sweeper or washed down to remove soil. The accumulated soil will be routinely removed from non-traffic areas such as gutters and curbs and managed in accordance with Section 7.10 of the work plan.
- No vehicle will exceed 15 miles per hour (mph) within the construction site and 5 mph in work areas.

If the preceding mitigation methods fail to properly control fugitive dust emissions, one or more of the following reasonably available control measures will be applied:

- Unpaved active portions of the construction sites will be watered or treated with dust-control solutions to minimize windblown dust and dust generated by vehicle traffic.
- Paved portions of the construction sites (including traffic routes) will be cleaned more frequently to control windblown dust and dust generated by vehicle traffic.
- Vehicle trips will be reduced if necessary.

2.2.2 Site Preparation

Fugitive dust emissions from site preparation, including clearing and grubbing, will be controlled using the following methods:

- Following clearing and grubbing, exposed surfaces will be wetted to sufficiently maintain soil-moisture content to minimize fugitive dust creation.
- Unpaved, inactive portions of the work area under construction will be watered, or a chemical soil stabilizer will be applied to minimize fugitive dust creation.

2.2.3 Material Stockpiles

Fugitive dust emissions from soil storage piles will be controlled by using a temporary cover, water, or a chemical soil stabilizer.

2.2.4 Transport of Solid Bulk Material

Fugitive dust emissions from trucks used to transport excavated and backfill material will be controlled using the following methods:

- Trucks that are used to transport solid bulk material will be covered (tarped) prior to leaving the site.
- Vehicles will be checked to ensure that they are tarped and to remove excess materials on the shelf or exterior surfaces of the cargo compartment.
- Bulk-loaded trucks will exit the work site via an established track-out control point.
- Truck tires will be inspected and dry brushed to remove dirt prior to leaving exclusion zones. Wet sweeping will be implemented as needed if track out of dirt is observed. Accumulated soil will be managed in accordance with the Section 7.0 of the work plan.

2.2.5 Excavation Activities

Fugitive dust emissions from excavation and loading activities will be controlled using the following methods:

- Soil will be wetted prior to soil-moving activities to reduce dust migration. Additional water will be added during active excavation, material handling, and loading on an as-needed basis. Active work areas will be wetted approximately every two hours or more frequently if needed, during periods of dry weather and/or windy conditions. A water truck or water buffalo will be dedicated to soil processing operations.
- The height from which excavated soil is dropped to trucks, stockpiles, or screening pads will be minimized.
- Trucks will be equipped with tarping systems to cover loads during soil transport.
- Truck traffic will be minimized to the shortest allowable haul routes from the work areas, screening area, and stockpile areas.
- Chemical soil stabilizer or straw mulch will be applied in sufficient quantities to disturbed areas to create a stabilized surface.
- Backfill materials will be wetted on an as-needed basis to maintain moisture. Loader busckets will be emptied slowly, and drop heights from loader buckets will be minimized. A water truck or water buffalo will be dedicated to backfilling operations.
- Water, a temporary cover, or chemical soil stabilizer will be applied to control fugitive dust emissions from stockpiled material when not actively handled.

2.2.6 Soil Processing and Management

Fugitive dust emissions from radiologically processing of soil through the soil sorter will be controlled using the following methods:

- Soil will be wetted prior to soil-moving activities to reduce dust migration. Additional water will be added during soil processing on the conveyor, material handling and loading on an as-needed basis. Active work areas will be wetted approximately every two hours or more frequently if needed, during periods of dry weather and/or windy conditions. A water truck or water buffalo will be dedicated to soil processing operations.
- The height from which soil is dropped onto the ground, trucks, stockpiles, or conveyor equipment will be minimized.
- Materials will be wetted on an as-needed basis to maintain moisture. Loader buckets will be emptied slowly, and drop heights from loader buckets will be minimized. A water truck or water buffalo will be dedicated to backfilling operations.
- Trucks will be equipped with tarping systems to cover loads during soil transport.

- Truck traffic will be minimized to the shortest allowable haul routes from the work areas and stockpile areas.
- Chemical soil stabilizer or straw mulch will be applied in sufficient quantities to disturbed areas so as to create a stabilized surface.
- Water, a temporary cover, or chemical soil stabilizer will be applied to control fugitive dust emissions from stockpiled material when not actively handled.

2.2.7 Backfill Activities

Fugitive dust emissions from backfill activities (cutting, filling, and grading material) will be controlled using the following methods:

- Soil will be wetted prior to soil-moving activities to reduce dust migration. Additional water will be added during active cutting (excavation), material handling, and loading on an as-needed basis. Active work areas will be wetted approximately every two hours or more frequently if needed, during periods of dry weather and/or windy conditions. A water truck or water buffalo will be dedicated to earthmoving operations.
- The height from which soil is dropped onto the ground, trucks, or stockpiles will be minimized.
- Trucks will be equipped with tarping systems to cover loads during soil transport.
- Truck traffic will be minimized to the shortest allowable haul routes from the work areas and stockpile areas.
- Chemical soil stabilizer or straw mulch will be applied in sufficient quantities to disturbed areas so as to create a stabilized surface.
- Backfill materials will be wetted on an as-needed basis to maintain moisture. Loader buckets will be emptied slowly and drop heights from loader buckets will be minimized. A water truck or water buffalo will be dedicated to backfilling operations.
- Water, a temporary cover, or chemical soil stabilizer will be applied to control fugitive dust emissions from stockpiled material when not actively handled.

2.2.8 Post-Construction Stabilization of Disturbed Areas

Disturbed areas will be restored to existing site conditions, which includes re-establishing concrete swales and asphalt roadways. Therefore, fugitive dust from remaining open areas will not be an issue.

2.2.9 Recycling

Non-impacted asphalt and concrete are typically recycled on site and may produce fugitive dust emissions. Fugitive dust emissions from recycling activities will be controlled using the following methods:

- Asphalt and concrete will be wetted prior to handling to reduce dust migration. A water truck or water buffalo will be dedicated to this activity.
- Additional water will be added during active grinding, sorting, material handling, and loading, as needed, to control fugitive dust.
- The height from which crushed material is dropped to trucks, stockpiles, or pads will be minimized.
- Trucks will be equipped with tarping systems to cover loads during transport.
- Truck traffic will be minimized to the shortest haul routes from the work areas and stockpile areas.
- A chemical soil stabilizer will be applied in sufficient quantities to stockpiles to create a stabilized surface.

2.2.10 Wind Speed and Air Monitoring Monitoring and Response

Because wind speed and direction have a direct influence on the potential for dust generation and downwind off-site dispersion, wind speed and direction will be monitored throughout the day via an on-site meteorological station. The on-site meterological station will be located at the former Hunters Point Naval Shipyard site trailer in Parcel C (Figure 1). The on-site meteorological station data will be periodically verified with off-site weather station data. The predominant wind direction at former Hunters Point Naval Shipyard is from the west or west-northwest. Wind roses from adjacent Parcel E and Parcels B-1, C, and UC-2 are provided on Figures 2 and 3, respectively.

As a general guide, dust-control measures will be evaluated and implemented in response to the potential for specific wind speed conditions that may exacerbate dust generation. Wind speed will be monitored by the on-site meteorological station throughout the day while construction activity is occurring. Wind speeds will be continuously monitored and recorded in 10-minute, time-weighted intervals. The exceedance of a threshold wind speed is defined as the point at which the threshold wind speed is exceeded during two consecutive 10-minute time-weighted intervals.

During earthmoving activities, a response action will be taken when the wind speed exceeds a threshold level for two consecutive 10-minute, time-weighted intervals, or if real-time air monitoring data has

sustained exceedances over a 15-minute interval. In addition, a windsock, designed to fully respond to a 15 mph wind speed will be installed at the site (Figure 1). The windsock will be monitored during earthmoving activities and will serve as a qualitative indicator of real-time wind speed and direction.

Response actions will be taken on the basis of ranges of wind speed conditions or dust monitoring data. When the recorded wind speed is between 0 and 15 mph, standard best management dust-control practices will be implemented (Sections 2.2.1 through 2.2.7). When the recorded wind speed is between 15 and 20 mph for two consecutive 10-minute time-weighted intervals, the construction foreman will conduct a sitewide survey on 60-minute intervals for evidence of wind-generated dust. In the event that wind-generated dust is observed or measured above the threshold, the foreman will increase the frequency of watering unpaved haul roads, wetting and/or stabilizing disturbed soil and street sweeping as needed. Truck traffic may also be reduced.

When the recorded wind speed is between 20 and 25 mph for two consecutive 10-minute, time-weighted intervals, the construction foreman will immediately increase the frequency of watering unpaved haul roads, wetting and/or stabilizing disturbed soil and street sweeping as needed. Truck traffic may also be reduced. The foreman will conduct a sitewide survey on 30-minute intervals for evidence of wind-generated dust.

In the event that wind-generated dust is observed or measured despite the application of the increased dust-control measures, the foreman will discontinue the work producing the dust until the wind speed is recorded below 20 mph for two consecutive 10-minute, time-weighted intervals and measured real-time dust (PM10) concentrations have returned to background or less than 40 $\mu g/m^3$.

When the recorded wind speed exceeds 25 mph for two consecutive 10-minute, time-weighted intervals, dust-generating work will stop until the wind speed drops below 25 mph for two consecutive 10-minute, time-weighted intervals.

The meteorological station will be programmed to send out a notification alarm to the construction foreman when the wind speed has reached wind speeds of 15, 20, and 25 mph for two consecutive, 10-minute time-weighted intervals.

3.0 AIR QUALITY MONITORING PROCEDURES

Air quality monitoring of fugitive dust emissions that may be generated during the radiological removal activites at the Site will be performed to ensure on-site worker safety and provide reasonable assurance of the protection of the surrounding residents and public receptors. Air quality monitoring equipment is operated and maintained under the direction and oversight of the APTIM Project Chemist and the APTIM Project Radiation Safety Officer. Any personnel involved in sampling air quality will be trained by Project Chemist or Project Radiation Safety Officer prior to any field activities. The training will be recorded in the field activity daily logs for the project.

Three types of air monitoring will be conducted during intrusive construction activities, and while stockpiles are present and workers are on site, and include the following:

- Air quality sampling (TSP, lead, manganese, PM10, and asbestos) at the Site perimeter
- Real-time dust monitoring at the Site perimeter and at daily work areas
- Radionuclides of concern (ROCs) air sampling at the Site perimeter and at daily work areas

Analytical results will be compared to the air sampling threshold criteria listed in Tables 1 and 2. If project activities are the cause of exceedances at real-time monitoring locations, additional control measures, as described in Section 2.2, will be implemented immediately. The Navy will be notified of exceedances and additional control measures within 24 hours. The Navy will notify regulatory agencies. If laboratory data from the filter-based air samplers exceeds the threshold criteria, the Navy will be notified. The data will be compared to the real-time dust monitoring, wind speed data, and Daily Contractor Production Reports, to determine the cause of any exceedances. Additional control measures will be implemented immediately, and an evaluation of the control and measurement strategy will be implemented. The Navy will notify regulatory agencies and share all available information regarding the exceedance. The Navy will consider requesting a quick-turn analysis of the next batch of filters to more quickly determine if exceedances are ongoing. If laboratory data shows exceedances that the continuous data do not, the Navy will evaluate the appropriateness of monitoring locations, sampling methods, and sampling frequency.

BAAQMD implements the California State ambient air quality standard (CSAAQS) for the Bay Area. The CSAAQS is designed to protect the general public from airborne particulates generated in the urban, suburban, and rural environments. The CSAAQS is not meant to be applied to project specific contruction actions and related air quality. Rather, the standard is used to attain city or regional-wide ambient air quality goals for the benefit of the general public. The current CSAAQS for PM10 is 50 micrograms per cubic meter ($\mu g/m^3$) average per 24-hour day. The City and County of San Francisco is currently a non-attainment area for the CSAAQS for PM10. Dust control measures will be implemented if real-time air monitoring data has sustained exceedances of 50 $\mu g/m^3$ over a 15-minute interval, as

described in Section 2.2.10. The upwind and downwind dust monitors will enable emissions from off site to be considered in the 50 µg/m^3 average per 24 hour day action level comparison, when wind speeds are greater than 5 mph and wind direction is constant over the sampling period. There will be situations, like stagnant conditions or when the wind direction varies during the data collection interval, where consideration of upwind is not appropriate. Reporting will include wind data and footnotes describing how and when upwind and downwind monitors have been used to exclude off-site emissions in air quality monitoring reports.

3.1 Air Quality Sampling and Real-Time Dust-Monitoring Locations

Air quality sampling and real-time dust monitoring are performed to estimate and assess the impact of the field activities to on-site receptors (i.e., workers) and off-site receptors (i.e., the public). Representative meteorological data specifically wind speed and direction, will be used to identify the most appropriate locations for the air-monitoring stations. The locations may be modified as needed for accessibility considerations and worker safety. Air quality sampling and real-time dust-monitoring stations will remain stationary while sampling is conducted.

Air quality sampling stations will be used to measure TSP, metals, PM10, asbestos, and ROCs. Real-time dust monitoring will be used to monitor employee work areas and at locations near the perimeter of the site to represent potential exposure for members of the public working or residing adjacent to the Site.

Figure 1 shows the proposed locations for air quality samples and real-time dust-monitoring stations. The air sampling station locations are based on the locations established in the *Final Basewide Dust Control Plan, Revision 1, Hunters Point Shipyard, San Francisco, California* (Tetra Tech EC, Inc, 2010), which provides consistency across multiple projects and parcels. The actual air sampling and dust monitoring locations will be sited to represent ambient air and will be a sufficient distance from physical obstructions, non-site sources, and site sources to the extent practicable to obtain representative data. air flow around buildings and obstruction will also be considered when establishing monitoring locations. There will be a minimum of two air-sampling stations, upwind Station 1A or 7, and downwind Station 1, 6A, or 15, and three real-time dust monitor stations, placed at the west, northeast, and north-northeast sections of the Site (Figure 1). For air sampling stations with high-volume particulate samplers, sampler inlets will be placed approximately 2 meters away from high-volume samplers. Inlets for collocated real-time dust monitors will be placed one meter apart. Inlet heights for air samplers and the dust monitors range from approximately 4.5 to 5.5 feet above the ground surface. Weather forecasts will be checked daily at www.noaa.gov to determine the prevailing wind direction(s).

Personnel real-time dust monitors, used for worker health and safety, are not show on Figure 1 as they are located within the footprint the daily work areas and move accordingly.

Radiological air monitoring will be conducted at upwind Station 1A or 7 and downwind Station 1, 6A, or 15, shown on Figure 1, in accordance with the applicable radiation work permit requirements and

APTIM Management System (AMS)-710-07-PR-04011, "Radiological Surveys and Monitoring" (APTIM, 2020). Additional radiological air monitors may be placed within the daily work areas to monitor for worker health and safety. These additional radiological air monitors are not shown on Figure 1 as they are relocated often based on daily work activities.

3.2 Air Quality Sample Collection and Testing Procedures

The air quality sampling for this project include portable air quality monitoring stations and real-time dust monitors that will be used to perform monitoring during field activities. Air quality sampling equipment is setup approximately 15 to 30 minutes before fieldwork is scheduled to begin. No earthmoving work will start until the sampling equipment is running. Air monitoring, as described in Section 1.0, will continue while stockpiles remain and workers are on Site. The workday is estimated to range from a minimum of 4 hours to maximum of 14 hours per day. Samples will be collected at the air quality stations and will be analyzed for the airborne contaminants of concern, including TSP, lead, and manganese, PM10, asbestos, and ROCs. Filter-based particulate samplers will monitor for 24, ±1, hours to represent each workday and the following night to collect a sample that is consistent in duration to the PM10 standard. The air-sampling stations will be supplemented with real-time dust monitoring. The air quality sampling will be used to assess the status of air quality compliance and to evaluate modifications to project activities in the event of compliance concerns.

Filter-based samplers for TSP (including metals), PM10, and asbestos will monitor for 24, ±1, hours to represent each workday and the following night. Filter-based samplers for ROCs will monitor for 104 hours to represent the workweek. If there have been no sustained exceedances of 50 µg/m^3 over a 15-minute interval from the real-time dust monitors on a Friday (or day preceding a holiday), samples may be collected at the end of that workday.

Tables 1 and 2 show the fugitive dust contaminants of concern for the site, regulatory limits and selected methodology sensitivity (reporting limit) to ensure the selected monitoring methods will achieve the project action limits. Table 3 lists sampling frequency and sampling methods for each air quality and real-time dust-monitoring station. Table 4 provides the field and laboratory quality control samples and laboratory standard operating procedure (SOP) references, and Table 5 provides the air-sampling equipment unit flow checks, controls, and maintenance.

3.2.1 Total Suspended Particulates, Manganese, and Lead

TSP will be sampled with a high-volume (39 to 60 cubic feet per minute) air sampler (HI-Q or Tisch high-volume sampler, or equivalent) in accordance with EPA's reference sampling method for TSP, described in Title 40 Code of Federal Regulations (CFR), Part 50, Appendix B. Each sample will be collected on a laboratory prepared, pre-weighed filter over the course of a period not to exceed 25 hours; the filter will then be returned to the laboratory and weighed to determine the amount of TSP collected. Once the filter weight has been determined, the sample will be analyzed for manganese and lead in accordance with one of the IO-3 methods identified in EPA's *Compendium of Methods for the*

Determination of Inorganic Compounds in Ambient Air (1999). The equipment specifications and sampling procedures will comply with the specifications provided in the regulations. The general procedures for sample collection are as follows:

1. Obtain pre-weighed prepared filters from laboratory.
2. Inspect/clean the unit for accumulated dirt/dust or insects.
3. Put on clean disposable sample gloves and open the filter cassette. Inspect the filter for pinholes, tears, abrasions, loose material, discoloration, and other non-uniformity. Discard any defective or damaged filters. Place new filter (ID # down) on the filter cassette. Record the filter ID number on the sample collection log.
4. Verify enough power supply/fuel for high-volume sampler for full day operation.
5. Turn on motor and allow the flow controller to stabilize (approximately five minutes).
6. Verify flow rate (39 to 60 cubic feet per minute), record starting flow rate and time on sample collection log.
7. End of day, put on a new clean pair of disposable gloves, stop the sampler and record time on sample collection log.
8. Carefully remove filter (care must be taken to not lose any particulate matter from the filter). Fold the filter inward in half (take care not to tear corners). Verify that filter ID matches ID on envelope and what is recorded on sample collection logs. Place inside filter envelope.
9. Label and prepare sample for shipment to the laboratory.

Attachment 3 provides APTIM's high-volume sampling procedure.

3.2.2 Particulate Matter Smaller than 10 Microns in Diameter

PM10 will be sampled with a high-volume (39 to 60 cubic feet per minute) air sampler (HI-Q or Tisch high-volume sampler, or equivalent) in accordance with EPA's reference sampling method for PM10, described in 40 CFR 50, Appendix J. Each sample will be collected on a laboratory prepared, pre-weighed filter over the course of a period not to exceed 25 hours. The filter will be returned to the laboratory and weighed to determine the amount of PM10 collected. Field PM10 sample collection procedures follow the same steps described above for TSP (Section 3.2.1).

3.2.3 Asbestos

Asbestos will be sampled and analyzed in accordance with National Institue for Occupational Safety and Health Method 7400, from the *NIOSH Manual of Analytical Methods* (National Institute for Occupational Safety and Health, 1994). Asbestos will be sampled with a low-volume air sampler (Gillian GilAir® air-sampling pump, or equivalent). National Institue for Occupational Safety and Health Method 7400 requires that samples be collected on three-piece cellulose ester filters fitted with conductive cowlings

at a sampling rate of between 0.5 liters per minute and 16 liters per minute. Each sample will be collected over a period not to exceed 25 hours. The general procedures for sample collection are as follows:

1. Obtain 25-millimeter mixed cellulose ester filters from laboratory.
2. Don clean, disposable sample gloves and connect the suction side of the filter to the pump inlet.
3. Place the cassette in the breathing zone height (between 4 to 6 feet from the ground) with the face pointed down (so the face of the cassette points to the ground).
4. Verify enough power supply/fuel for sample pump for full day operation.
5. Turn on motor and allow the flow controller to stabilize (approximately five minutes). For a 25-millimeter cassette, the method recommends a minimum of 400 liters of air at between 0.5 to 16 liters per minute. Field flow rates are set between 2 to 4 liters per minute. Record starting flow rate and time on sample collection log.

   NOTE: The asbestos phased contrast microscopy method analysis is adversely affected by accumulations of dust on the filter. The filter will be inspected every two to three hours during the workday. If buildup of dust is observed on the filter, the cassette will be changed, and the times recorded. Both filters will be submitted for analysis.
6. End of day, put on a new, clean pair of disposable gloves, stop the sampler, and record time on sample collection log.
7. Label and prepare sample for shipment to the laboratory. One filter field blank is submitted to the laboratory for every day of sample collection.

Attachment 3 provides APTIM's asbestos sampling procedure.

3.2.4 Dust Real-Time Monitoring

Real-time dust monitoring includes two different procedures and action limits specific to the receptor.

3.2.4.1 Personnel Dust Monitoring

Data logging real-time aerosol monitors (miniRAM or equivalent) or personal data RAMs (personal data ram [PDR]) will supplement PM10 readings to provide immediate information for dust levels present in the working zone. The data collected will be used to evaluate the effectiveness of dust-control procedures (in real time) and provide data during the lag time between compound-specific sampling events and laboratory analysis of the samples. The Site Safety and Health Officer will conduct monitoring to ensure that each site worker is adequately protected. In consultation with the Health, Safety, and Environmental Manager, the Site Safety and Health Officer will determine if personal or additional perimeter monitoring is required to evaluate the potential for personnel exposure.

The personnel monitor will be strategically placed downwind of operations and positioned at an approximate height of 5 feet. PDRs will be placed adjacent to earthmoving activities. PDRs will be checked frequently during the workday and stored data will be downloaded at the end of the work shift. The monitors will be calibrated and operated in accordance with manufacturer's specifications. APTIM will pay special attention to the possibility of high readings generated by water vapor, insects, or equivalent, and thereby the chance of generating false positives. Such observations will be logged. Dust concentrations at or above 1.0 milligram per cubic meter require additional dust suppression be applied for worker health and safety. Further details about the procedures and documentation forms are found in Appendices A, E and F of the *Final Accident Prevention Plan, Radiological Confirmation Sampling and Survey Parcels D-2, UC-1, UC-2, and UC-3, Former Hunters Point Naval Shipyard, San Francisco, California* (APTIM, 2019).

3.2.4.2 Dust Monitoring for Off-site Receptors

In addition to the high-volume air quality sampling for PM10 discussed in Section 3.2.2, real-time dust monitoring for PM10, using a DustTrak™ II or equivalent, will be performed at Site boundaries nearest to publicly occupied areas. Figure 1 shows the locations. In accordance with the DTSC memorandum (*Human and Ecological Risk Office [HERO] Memorandum, Draft Dust Action Levels for Parcel G, Hunters Point Naval Shipyard, San Francisco, California* [DTSC, 2019]), this additional real-time dust monitoring data will be compared to the DTSC Human and Ecological Risk Office dust action level of 50 µg/m^3 average per 24-hour day for total PM10, which is based on the BAAQMD regulatory limit. Prior to beginning construction activities, background PM10 data may be collected to establish baseline concentrations. During earthmoving activities, real-time dust levels (PM10) will be monitored during the workday to ensure that the dust action levels are not exceeded over a sustained interval of more than 15 minutes, and/or additional dust suppression methods are used if the dust action levels are exceeded. If project activities are the cause of exceedances, additional dust-control measures will be implemented but not preclude the continuation of work activities. Section 2.2 describes dust suppression methods. The real-time PM10 dust monitoring data will be summarized and provided to the Navy on a weekly basis. The general procedures for DustTrak™ II operation are as follows:

8. Obtain desktop Dust Track™ aerosol monitor (or equivalent monitor) equipped with data logging functions and cloud-based remote telemetry capabilities. This allows for wireless setup, monitoring, and programing directly from a computer.
9. Install the monitor in the environmental protection and tamper-proof security enclosure, which protects the instrument within a waterproof, lockable case.
10. The monitor inlet will be set at an approximate height of 4.5 to 5.5 feet from the ground.
11. Verify there is enough power supply/fuel for sample pump for full day operation.
12. Automatic flow rate is set at 3 liters per minute with a ±5 percent tolerance limit. The instrument self-zeroes twice per day.

13. Each instrument will be verified for flow when installed and weekly with a certified flow standard. This is consistent with the instrument manual which states: "There is an internal ΔP flowmeter in the DustTrak II instrument that controls flow rate to ± 5 percent of the factory setpoint. TSI Incorporated recommends checking the flow with an external flow reference meter, especially when collecting data."
14. The DustTrack™ has built-in instantaneous alarm settings with visual, audible, and cloud-based warnings for exceedances, flow rate control, zero control, and filter condition that may indicate maintenance is required. If needed, maintenance or unit replacement is conducted by the APTIM Project Chemist or designee through support from equipment supplier (EquipCo, Concord, California).
15. One instrument will be used for collocated measurements at the southwest monitoring station. This instrument will also be available as a backup instrument as needed. Weekly the samplers will be rotated to different sampling locations such that each sampler is collocated at least one week per month. The criteria for evaluation of dust precision between real-time instruments will be ± 30 percent over the sampling day.
16. Data logging is continuous 24 hours/7 days a week; however, APTIM downloads data at the end of the workday for reporting purposes.

3.2.5 Radionuclides of Concern

Airborne radioactivity monitoring (continuous or grab samples) will be conducted during the course of work. Table 2 shows the ROCs and its respective action levels for workers and the public (off-site receptor).

To control occupational exposures, establish personal protective equipment, and determine respiratory protection requirements, monitoring and trending for airborne radioactive material will be performed as necessary. Each ROC, as specified in Title 10 CFR, Part 20, Appendix B, has a derived airborne concentration (DAC) value. DAC is defined as the concentration in air that will result in an intake of one annual limit if breathed for a working year under light working conditions (inhalation rate of 1.2 cubic meters of air per hour). The annual limit is the derived limit for the quantity of radioactive material intake into the body of a worker by inhalation or ingestion in a year. Engineered controls will be implemented, as described in Section 2.0, if required to maintain airborne concentrations below 10 percent of the applicable DAC value for the ROCs at the sites.

Perimeter samples for ROCs will be collected to demonstrate engineering controls are protective of public health for off-site receptors. The ROC sampling locations will be co-located with the dust monitoring locations on Figure 1. Radiological air samples will be collected using low volume air samplers, F&J Specialty Products, Inc. Model LV-1D (or equivalent). One sample will be collected over 24 hours to achieve the sample volume required to provide minimum detectable activities below the action levels. Following sample collection, air filters will be allowed to decay for 72 hours before counting to

prevent short-lived radon daughters from interfering with analysis. Following decay, the sample filters will be counted on site using a Ludlum Model 3030 (or equivalent). Air filters indicating positive activity above action levels on initial assessment will be decayed an additional minimum of 72 hours before final on-site assay. If activity above the action level is still indicated after the decay period, the filter will be sent to the off-site laboratory for additional analysis including low background gross alpha and beta analysis and/or isotopic analysis. The filter will be analyzed for the following:

- Cesium-137 by gamma spectroscopy according to EPA Method 901.1MOD/DOE EML HASL 300 method GA-01-R
- Strontium by EPA Method 905.0 or equivalent methods
- Alpha-emitting radium isotopes by EPA Method 903.0 or equivalent methods

Laboratory SOPs for radionuclide analyses are provided in Attachment 2 to the Sampling and Analysis Plan Addendum (Appendix B of this Work Plan). Attachment 3 includes the filter preparation SOP (SOP ST RC 0004) for ROCs.

3.3 Field Quality Control Procedures

A quality control (QC) program will be implemented to ensure that collected data are accurate and precise to effectively characterize both the magnitude and variations in ambient conditions at the sampling and monitoring stations. Complete documentation of the results of routine operations and QC aspects of the program, including log notes, calibration forms, and certifications, will be maintained on file. Table 4 presents the frequency and type of field QC samples. Key elements of the routine field QC program will include the following:

- Routine visits, approximately every two to three hours during the workday, to each sampling station over the sampling period to check sampler pump flow rates, verify operation and sample conditions, and note any ambient conditions that could affect the accuracy or representativeness of the sample
- Collection of field blanks at a frequency of one sample per week while equipment is in operation (Table 4)
- Monthly or weekly flow rate verification using an external National Institute for Standards and Technology-traceable flow meter (Table 5)
- Calibration of the sampling pumps and flow devices
- Routine preventative maintenance of equipment components

Air sampling will be conducted at upwind and downwind locations located on the Site. Precision will be measured with every sample batch through laboratory duplicates from submitted samples (Table 4).

Additionally, a collocated real-time dust monitor will be placed at the northeast monitoring site, with the other instruments rotating through on a regular basis. This real-time dust monitor will be available if a replacement instrument is needed, if another location needs to be sampled, or if an instrument malfunctions. The criteria for evaluation of PM10 precision between real-time instruments will be ±30 percent over the sampling day.

3.3.1 Calibration Flow Rates and Maintenance

The flow rate of the air samplers will be calibrated to establish traceability of the field measurement. Calibrations will follow the guidelines specified in 40 CFR, Part 50, Section 9.3 and Section 2.6 of EPA *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods* (1998). Calibration procedures will follow manufacturer's instructions and will utilize manufacture calibration kits as applicable. Table 5 describes field sampler calibration, monitoring and maintenance.

Air sampling and dust monitoring equipment will be inspected daily (workdays) before operation and water vapor, insects, or other accumulation that may affect monitoring will be removed. If necessary and at the discretion of the on site air monitoring personnel, the air sampling and dust monitoring equipment may need to be shut down and protected during precipitation events. These events are deemed necessary due to safety concerns and equipment integrity issues. To protect against adverse weather, the high volume air samplers used for collecting PM10 and TSP are housed in rugged all weather shelters. Real time dust monitors (DustTrak™ II or equivalent) are housed in environmental enclosures to protect against the elements. Equipment shutdowns will be noted in the Daily Production Report. Shutdowns of air sampling stations, real time dust monitors, or individual units being inoperable will not preclude removal activities at the associated work site. If work proceeds with inoperable air sampling stations, real-time dust monitors, or individual units the Navy will be notified. If instruments are inoperable for more than a week, the regulatory agencies will be notified. Shutdowns will be kept to a minimum and will be described in air quality monitoring reports.

3.3.2 Sample Documentation, Custody, and Field Logs

Field logs will be used to properly record information after collecting the samples. Appropriate field data, such as date, time, sample identification, calibration data, sample location, ambient temperature and pressure, and additional information or observations that could influence analyses of the results will be entered on the field logs. Attachment 2 provides field forms.

Samples shipped off site for analysis will be documented on a Chain of Custody Form following the standard procedure described in the Sampling and Analysis Plan (Appendix B of this Work Plan Addendum). Standard sample ID format will be applied to air quality monitoring samples collected throughout the project duration. The sample IDs are assigned using the following format:

FaciltyID Parcel ID—Test Date—Station ID

Examples

HPUC3—TSP120120—1UPWIND

HPUC2—PM10120120—6ADOWNWIND

4.0 DATA REVIEW AND REPORTING

Dust-control activities, wind data, air monitoring equipment shutdowns, and PDR results will be documented during construction activities and included in the Daily Contractor Production Reports. The APTIM Project Chemist will review off-site laboratory results for compliance with laboratory specified bias, precision, and accuracy requirements. The data review will be in follow the general guidelines in the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (EPA, 2017). The Project Chemist in conjunction with Project Task Lead will compile laboratory and field data for reporting to the Navy Remedial Project Manager.The Navy will report dust-control activities, wind data, and PDR results to EPA and DTSC on a weekly basis. Air-sampling reports will be prepared as analytical results are received from the laboratory and electronically submitted biweekly (depending on the receipt of analytical data) to the Navy. The Navy will provide the reports to EPA and DTSC on a biweekly basis and will post them to the Former Hunters Point Naval Shipyard website as they are available. The air-sampling report will include a brief summary of laboratory data quality, will identify any QC outliers and will include a statement of data usability for project decision. Laboratory reports will be included in the remedial action completion report.Radiological sampling results will be reported if there are exceedances.

5.0 REFERENCES

Aptim Federal Services LLC, 2019, *Final Accident Prevention Plan, Radiological Confirmation Sampling and Survey Parcels D-2, UC-1, UC-2, and UC-3, Former Hunters Point Naval Shipyard, San Francisco, Califronia.*

Aptim Federal Services, LLC, 2020, *APTIM Management System*.

Bay Area Air Quality Management District, 2015, *Particulate Matter and Visible Emissions*, 6 301 Ringelman No. Limitation, 6 302 Opacity Limitation, and 6 305 Visible Particles, October.

California Department of Toxic Substances Control, 2019, *Human and Ecological Risk Office Memorandum, Draft Dust Action Levels for Parcel G, Hunters Point Naval Shipyard, San Francisco, California*.

National Institute for Occupational Safety and Health, 1994, *NIOSH Manual of Analytical Methods,* Method 7400, August.

Tetra Tech EC, 2010, *Final Basewide Dust Control Plan, Revision 1, Hunters Point Shipyard, San Francisco, California*, November 29.

U.S. Environmental Protection Agency, 1998, *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods*.

U.S. Environmental Protection Agency, 1999, *Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air*.

U.S. Environmental Protection Agency, 2017, *National Functional Guidelines for Inorganic Superfund Methods Data Review*, January.

Figures

Figure 1
Air Sampling and Dust Monitoring Locations, Parcels D-2, UC-1, UC-2, and UC-3

Figure 2
Wind Rose—Parcel E

Figure 3
Wind Rose—Parcels B-1, C, and UC

Tables

Table 1
Dust-Monitoring and Air-Sampling Threshold Criteria

Contaminant of Concern	Action Level	Sample Time Interval	Basis	Reporting Limit [1]	Re
Real-Time Dust Monitoring					
Real-time dust monitoring (PM10)	50 µg/m^3	24 hours	DTSC HERO developed action level [2] (residents and public receptors)	1 µg/m^3	Dust control measures time dust monitoring d exceedances of 50 µg interval.
Filter-Based Air Sampling					
TSP	500 µg/m^3	24 ± 1 hours [3]	Basewide HPNS level chosen to minimize overall permissible dust release from sites	0.0003 mg/m^3	
Pb	50 µg/m^3	24 ± 1 hours [3]	Cal/OSHA PEL (on-site workers)	0.020 µg/m^3	Compare data to real- speed data, and Daily Reports to determine
Mn	200 µg/m^3	24 ± 1 hours [3]	Cal/OSHA PEL (on-site workers)	0.020 µg/m^3	If exceedances are pr control measures will
PM10	50 µg/m^3	24 ± 1 hours [3]	DTSC HERO developed action level [2] (residents and public receptors)	0.0003 µg/m^3	If exceedances are no evaluate appropriaten sampling methods, an
PM10	5,000 µg/m^3	24 ± 1 hours [3]	Cal/OSHA PEL [4] (on-site workers)	0.0003 µg/m^3	Navy will notify regula
Asbestos	0.1 fiber per cubic centimeter	24 ± 1 hours [3]	Cal/OSHA PEL (on-site workers)	0.005 fiber per cubic centimeter	

Notes:

[1] Reporting limit is based on volume of air collected and will vary, reporting limit shown is typical for normal operation day.

[2] Action level for dust (PM10) was developed by DTSC HERO, is based on a 24-hour average concentration, and is protective for all Parcel G non-radiological contaminants of concern (DTSC, 2019).

[3] If there have been no sustained exceedances of 50 µg/m^3 over a 15-minute interval from the real-time dust monitors on a Friday (or day preceding a holiday), samples may be collected at the end of that workday.

[4] Cal/OSHA PEL for particulates not otherwise regulated (respiratory) used for PM10.

µg/m^3	*microgram per cubic meter*
Cal/OSHA	*California Occupational Safety and Health Administration*
DTSC	*California Department of Toxic Substances Control*
EPA	*U.S. Environmental Protection Agency*
HPNS	*former Hunters Point Naval Shipyard*
mg/m^3	*milligram per cubic meter*
Mn	*manganese*
Pb	*lead*
PEL	*permissible exposure limit*
PM10	*particulate matter smaller than 10 microns in diameter*
TSP	*total suspended particulates*

Table 2
Radionuclides of Concern Airborne Concentration Action Levels

ROC	ROC Class	Radiations	Worker [1] 10% DAC (µCi/mL)	Off-site Receptor [2] Effluent Concentration (µCi/mL)	Laboratory or Field Reporting Limit [3] (µCi/mL)
Laboratory Measurements					
Cesium-137	D, all compounds [4]	Gamma, Beta	6.0E-9	4.00E-11	1.47E-15
Radium-226	W, all compounds [4]	Gamma, Alpha	3.0E-11	1.80E-13	7.36E-15
Strontium-90	Y, all insoluble compounds and $SrTiO_3$ [4]	Beta	2.0E-10	1.2E-12	2.06E-14
Field Measurements					
Gross alpha/beta on-site measurements with Ludlum Model 3030 (or equivalent)	N/A	Alpha Beta	3.0E-11 [5] 2.0E-10 [5]	1.80E-13 [5] 1.2E-12 [5]	5.7E-14 3.8E-13

Notes:

[1] The guideline values were determined using 10 percent of the DAC provided in the 10 CFR, Part 20, Appendix B and specified in the Final Basewide Dust Control Plan, Revision 1, Hunters Point Shipyard, San Francisco, California (Tetra Tech EC, Inc., 2010).

[2] The effluent concentration values were determined using the 10 CFR, Part 20, Appendix B, Table 2, Column 1 adjusted from 50 mrem per year to a maximum annual exposure of 10 mrem per year at the receptor. Results may be evaluated using 40 CFR Appendix E to Part 61 to demonstrate complaiance with the National Emission Stanrdards for Hazardous Air Pollutants (40 CFR Part 61).

[3] Reporting limit is based on volume of air collected and will vary, reporting limit shown if tuypical for normal operation day.

[4] The ROC class was determined in the Final Basewide Dust Control Plan, Revision 1, Hunters Point Shipyard, San Francisco, California (Tetra Tech EC, Inc., 2010).

[5] The most conservative concentration will be used for alpha and beta on-site measurements. The Ludlum Model 3030 (or equivalent) counts filters in units of counts per minute. Using the alpha/beta air-monitoring field form (Attachment 2), the counting results are converted to units of µCi/mL. The conversion calculation is based on sample run time, flow rate, background, efficiency, and counts per minute.

µCi/mL	*microcuries per milliliter (activity)*
%	*percent*
CFR	*Code of Federal Regulations*
D	*daily*

DAC	*derived airborne concentration*
Mrem	*millirem*
N/A	*not applicable*
ROC	*radionuclide of concern*
$SrTiO_3$	*strontium titanate*
W	*weekly*
Y	*yearly*

Table 3
Air-Sampling and Dust-Monitoring Frequency and Sample Collection Methods

Test Scenario	Type of Analysis	Sampling Method [1]	Frequency
Excavation and soil handling (upwind and downwind)	TSP	40 CFR, Part 50, Appendix B	One sample per 24 hours [3]
	Metals (Mn, Pb)	40 CFR, Part 50, Appendix B	One sample per 24 hours [3]
	PM10	40 CFR, Part 50, Appendix J	One sample per 24 hours [3]
	Asbestos	NIOSH Method 7400	One sample per 24 hours [3]
	ROCs	D2006-4550-011 [2]	One sample per 24 hours [3]
	Real-time dust monitoring	DustTrak™ II or equivalent	Continuous daily during work [5]
Placement of backfill and site restoration (upwind and downwind)	TSP	40 CFR, Part 50, Appendix B	One sample per 24 hours [3]
	Metals (Mn, Pb)	40 CFR, Part 50, Appendix B	One sample per 24 hours [3]
	PM10	40 CFR, Part 50, Appendix J	One sample per 24 hours [3]
	Asbestos	NIOSH Method 7400	One sample per 24 hours [3]
	ROCs	D2006-4550-011 [2]	One sample per 24 hours [3]
	Real-time dust monitoring	DustTrak™ II or equivalent	Continuous daily during work [5]

Notes:

[1] Sampling method to be employed for emissions analysis or industry-recognized equivalent. Laboratory standard operating procedures for analysis are included in Table 4 and provided in Attachment 3.

[2] D2006-4550-011, "operation and Use of Portable Instruemnts at Hunters Point Naval Shipyard" (APTIM, 2020), is a work instruction used for radiolpogical air-sampling activities by APTIM and is provided in Attachment 3.

[3] If there have been no sustained exceedances of 50 µg/m3 over a 15-minute interval from the real-time dust monitors on a Friday (or day preceding a holiday), samples may be collected at the end of that workday.

[4] A work week will span approximately 104 hours.

[5] The length of a workday may range from a minimum of four hours up to 14 hours.

APTIM	*Aptim Federal Services, LLC*
CFR	*Code of Federal Regulations*
Mn	*manganese*
NIOSH	*National Institute for Occupational Safety and Health*
Pb	*lead*
PM10	*particulate matter smaller than 10 microns in diameter*
ROC	*radionuclide of concern*
TSP	*total suspended particulates*

Table 4
Field and Laboratory Quality Control Samples

Parameter	Blank (Bias Contamination)	Laboratory/Field Control Sample (Accuracy)	Field/Laboratory Duplicate (Precision)	SOP Reference	Laboratory/ Organization
Asbestos PCM 7400/NIOSH 7400	Field filter blanks submitted with each sample group Results < reporting limit; see SOP if fibers detected in blank	Blind Daily Reference Slide per analyst; control limits vary based on slide submitted; Analyst must fall within limits	Laboratory precision is calculated per analyst based on last 20 reference slides. Standard deviation ≤ 0.45	EMSL SOP -ASB-SOP-300, "Asbestos and Other Fibers by PCM 7400," NIOSH 7400 Issue 3	LA Testing 5431 Industrial Drive Huntington Beach, CA Project Manager: Terry Chang 714 895 5494
Dust (measured as PM10)	Internal Self Zero twice/day	Weekly flow rate check with external NIST traceable flow calibrator; 3 L/min tolerance ± 5%	Field precision is calculated using one (1) collocated dust monitor RPD ≤ 30% for detections above 15 µg/m^3	Manufacturers operation manual and Section 3.2.4.2	EquipCo Rentals PO Box 5606 Concord, CA Representative: Jason Miller 888.234.5678 APTIM Equipment Services 16406 E US Route 224, Bay 5 Findlay, OH Representative: Michael Hindall 419.425.6054
PM10	Weekly Field Filter Blank—Difference in initial and final concentration ±5 µg/m^3 Laboratory Filter Blank- Daily per analytical batch Results < reporting limit	Analytical balance accuracy check per SOP	Laboratory Duplicate Daily per analytical Batch RPD ≤ 10%	Eurofins-Calscience SOP-M791, "40 CFR, Part 50 Appendix J, PM-10 Gravimetric Measurements" and "Total Suspended Particulates in Air"	Eurofins Calscience 7440 Lincoln Way Garden Grove, CA Project Manager: Terry Chang 714 895 5494

Table 4 (continued)
Field and Laboratory Quality Control Samples

Parameter	Blank (Bias Contamination)	Laboratory/Field Control Sample (Accuracy)	Field/Laboratory Duplicate (Precision)	SOP Reference	Laboratory/ Organization
TSP	Weekly Field Filter Blank—Difference in initial and final concentration ±5 µg/m^3 Laboratory Filter Blank- Daily per analytical batch Results < reporting limit	Analytical balance accuracy check per SOP	Laboratory Duplicate Daily per analytical Batch RPD ≤ 25%		Eurofins Calscience 7440 Lincoln Way Garden Grove, CA Project Manager: Terry Chang 714 895 5494
Metals (Pb/Mn) on TSP filter EPA 6010	Laboratory Filter Blank Daily per analytical batch Results < reporting limit	Daily per analytical batch Pb % Recovery: 80%–120% Mn % Recovery: 80%–120%	Laboratory Duplicate Daily per analytical batch RPD ≤ 20%	Eurofins-Calscience SOP-M623, "40 CFR, Part 50, Appendix G, Determination of Lead in Suspended Particulate Matter Collected from Ambient Air" and SOP-M601, "EPA Method 6010B, ICP, AES"	Eurofins Calscience 7440 Lincoln Way Garden Grove, CA Project Manager: Terry Chang 714 895 5494
Gross alpha/beta on-site measurements with Ludlum Model 3030 (or equivalent)	Field filter cartridge blank at the start and end of sample counting Results ≤ Background	Daily response source check Alpha Check Source: ^{230}Th Beta Check Source: ^{99}Tc +/- 20% of known	Field Replicate Reading One per 10 field samples RPD ≤ 30% (for results > Background)	APTIM Work Instruction D2006-4550-011, "Operation and Use of Portable Instruments at Hunters Point Naval Shipyard"	APTIM Equipment Services 16406 E US Route 224, Bay 5 Findlay, OH Representative: Michael Hindall 419 425 6054

Table 4 (continued)
Field and Laboratory Quality Control Samples

Parameter	Blank (Bias Contamination)	Laboratory/Field Control Sample (Accuracy)	Field/Laboratory Duplicate (Precision)	SOP Reference	Laboratory/ Organization
Off-Site Gamma Spec Laboratory Analysis: ^{137}Cs	Field Filter Blank Daily per analytical batch No analytes detected greater than MDC	One per analytical batch Recovery Limits: ^{137}Cs: 75–125% ^{60}Co: 75–125% ^{241}Am: 75–125%	One per analytical batch RPD ≤25%	Eurofins-TestAmerica SOP ST-RC-0004, "Filter Prep" and SOP ST-RD-0102, "Gammavision® Analysis," 3/22/19, Revision 18	TestAmerica St. Louis 13715 Rider Trail N, Earth City, MO Project Manager: Rhonda Ridenhower 314 298 8566
Off-Site Laboratory Analysis: ^{90}Sr	Field Filter Blank Daily per analytical batch No analytes detected greater than MDC	One per analytical batch Recovery Limits: 75–125%	One per analytical batch RPD ≤25%	Eurofins-TestAmerica SOP ST-RC-0004, "Filter Prep" and SOP ST-RD-0403, "Low Background Gas Flow Proportional Counting System Analysis"	TestAmerica St. Louis 13715 Rider Trail N, Earth City, MO Project Manager: Rhonda Ridenhower 314 298 8566
Off-Site Alpha Spec Laboratory Analysis: ^{226}Ra	Field Filter Blank Daily per analytical batch No analytes detected greater than MDC	One per analytical batch Recovery Limits: ^{226}Ra: 75–125%	One per analytical batch RPD ≤25%	Eurofins-TestAmerica SOP ST-RC-0004, "Filter Prep" and SOP ST-RD-0210, "Alpha Spectroscopy Analysis"	TestAmerica St. Louis 13715 Rider Trail N, Earth City, MO Project Manager: Rhonda Ridenhower 314 298 8566

Table 4 (continued)
Field and Laboratory Quality Control Samples

Notes:

Attachment 3 provides Eurofins-Calscience SOPs, Eurofins-TestAmerica ST-RC-004, and APTIM Work Instruction D2006-4550-011, "Operation and Use of Portable Instruments at Hunters Point Naval Shipyard." Other SOPs for Eurofins-TestAmerica for off-site analysis (if needed) are provided in Attachment 2 to the Sampling and Analysis Plan Addendum (Appendix B of this Work Plan).

%	*percent*
≤	*less than or equal to*
^{241}Am	*americurium-241*
^{60}Co	*cobalt-60*
^{137}Cs	*cesium-137*
^{238}Pu	*plutonium-238*
^{239}Pu	*plutonium-239*
^{226}Ra	*radium-226*
^{90}Sr	*strontium-90*
^{232}Th	*thorium-232*
^{235}U	*uranium-235*
CFR	*Code of Federal Regulations*
EMSL	*EMSL Analytical, Inc. Management*
EPA	*U.S. Environmental Protection Agency*
L/min	*liters per minute*
MDC	*minimum detected concentration*
Mn	*manganese*
NIOSH	*National Institute for Occupational Safety and Health*
NIST	*National Institute for Standards and Technology*
Pb	*lead*
PCM	*phased contrast microscopy*
PM10	*particulate matter smaller than 10 microns in diameter*
RPD	*relative percent difference*
SOP	*standard operating procedure*
TSP	*total suspended particulate*

Table 5
Air-Sampling Unit Flow Checks and Controls

Units/Flow Rate	Flow Rate	Drift	Unit taken out of service
High-volume Air Sampler (TSP and PM10) (39 to 60 cubic feet per minute)	Set/check integrated flow meter at start of day and end of day Verified flow monthly, or anytime the unit is moved, using external NIST-traceable flow controller Flow rates recorded on sample collection log	Verified quarterly or any time the unit is moved, or for each unit using manufacture calibration kits Flow rate verified with external NIST-traceable flow controller monthly (or more frequently if deemed necessary) Calibration recorded in the Calibration Logbook	When drift cannot be corrected, or calibration fails or expires PM10 sampler taken out of service quarterly for cleaning the PM10 size selective sampling device
Asbestos Low-volume Air Sampler 25-millimeter cassette: 2 to 4 liters per minute (400-liter minimum) 37-millimeter cassette: 2 to 10 liters per minute (3,000-liter minimum)	Set/checked at start and end of each day Verified monthly, or anytime the unit is moved, using NIST traceable flow controller Flow rates recorded on sample collection log	Verified quarterly or any time the unit memory is full, using manufacture calibration kits Calibration recorded in the Calibration Logbook	When it fails calibration
ROCs Low-volume Samplers (60 liters per minute)	Set/checked at start of day with NIST traceable calibrated rotameter Flow rates recorded in the ROC Air Sample Logbook and on the sample collection envelope	Verified daily upon setup (with rotameter) Calibration performed yearly, or after repair; recorded in the ROC Air Sample Logbook	When unable to achieve 60 liters per minute, requires repair, or manufacture calibration is due (yearly)
DustTrak™ II PM10 Real-time Dust Monitor	Daily flow rates are internally continuously monitored	Verified weekly ± 5 percent setpoint/ DustTrak™ II Operation and Service Manual Recalibrate as needed	Check power supply When zero control cannot be maintained or per manufacturers guidelines

Notes:

NIST	*National Institute for Standards and Technology*
PM10	*particulate matter smaller than 10 microns in diameter*
ROC	*radionuclide of concern*
TSP	*total suspended particulate*

Attachment 1
Crosswalk

UFP SAP Worksheet #	Information	Crosswalk to Related Information in Work Plan
1, 2	Title and Approval Page	DMP Title and Approval Page
3, 5	Distribution List/Project Organizational Chart	SAP WSs 3 and 5, DMP Table 4
4, 7	Personnel Qualifications/Responsibilities and Sign-off Sheet	SAP WSs 4 and 7
6	Communication Pathways	SAP WS 6
7	Personnel Responsibilities Table	SAP WS 7, the Project Chemist and the PRSO/Radiological Supervisor are responsible for air monitoring
8	Special Personnel Training Requirements Table	SAP WS 8 and DMP Section 3.0
9	Project Planning Session Summary Sheet	SAP WS 9
10	Conceptual Site Model	SAP WS 10
11	Project/Data Quality Objectives	• DQO Step 1—Problem Statement: DMP Section 1.0, Paragraph 1, provides the problem statement • DQO Step 2—Objective: DMP Section 1.0, Paragraph 3, states air monitoring is performed to ensure worker safety and provide reasonable assurance of the protection of the surrounding residents • DQO Step 3—Inputs to Objective: DMP Section 1.0, Paragraph 3, identifies data inputs • DQO Step 4—Study Boundaries: DMP Figure 1 shows the study boundaries • DQO Step 5—Decision Rules: DMP Section 3.0, Paragraph 3, DMP Section 3.2.4.1, Paragraph 2, DMP Section 3.2.4.2, Paragraph 1, DMP Section 3.2.5, Paragraph 1, and DMP Table 1 identify the decision rules • DQO Step 6—Performance Criteria: Sample data will be compared to DMP Tables 1, 2, and 4 • DQO Step 7—Plan for Obtaining Data: DMP Sections 2.0 and 3.2 provide the plan for obtaining air monitoring data
12	Field Quality Control Samples (per NAVFAC TIER 1 SAP)	DMP Table 4
13	Secondary Data Criteria and Limitations Table	DMP Sections 2.2.10 and 3.1
14	Summary of Project Tasks	DMP Sections 2.0, 3.0, and 4.0
15	Reference Limits and Evaluation Tables (per NAVFAC TIER 1 SAP)	DMP Tables 1 and 2
16	Project Schedule/Timeline Table	SAP WS 16
17	Sampling Design and Rationale	DMP Section 2.2.10, and 3.0 through 3.2.5

UFP SAP Worksheet #	Information	Crosswalk to Related Information in Work Plan
18	Location-Specific Sampling Methods/SOP Requirements Table	DMP Figure 1 and Tables 3 and 4
19	Field Sampling Requirements Table	DMP Section 3.2 (including 3.2.1 through 3.2.5)
20	Field QC Sample Summary Table	DMP Table 4
21	Project Sampling SOP References Table	DMP Tables 3, 4, and Attachment 3 SAP Attachment 2
22	Field Equipment Calibration, Maintenance, Testing, and Inspection Table	DMP Table 5
23	Analytical SOP References Table	DMP Table 4 and Attachment 3 SAP Attachment 2
24	Analytical Instrument Calibration Table	DMP Attachment 3 SAP WS 24a
25	Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	SAP WS 25
26, 27	Sample Handling System/Sample Custody Requirements	DMP Section 3.3.2 SAP WSs 26 and 27
28	Laboratory QC Samples Table	DMP Table 4 SAP WSs 28a, 28b, and 28c
29	Project Documents and Records Table	SAP WS 29
30	Analytical Services Table	DMP Table 4
31, 32, 33	Assessments and Corrective Action	SAP WSs 32 and 33
34, 35, 36	Data Verification and Validation (Steps I and IIa/IIb) Process Table	DMP Section 4.0
37	Usability Assessment	DMP Section 4.0

Notes:

DMP	*Dust Management and Air Monitoring Plan*
DQO	*data quality objective*
EPA	*U.S. Environmental Protection Agency*
NAVFAC	*Naval Facilities Engineering Command*
PRSO	*Project Radiation Safety Officer*
QC	*quality control*
SAP	*Sampling and Analysis Plan Addendum (Appendix B of this Work Plan)*
SOP	*standard operating procedure*
WS	*worksheet*

Attachment 2
Field Forms

Attachment 3
Work Instruction and Standard Operating Procedures

Proposed Confirmation Soil Sample Location for Cesium 137

Parcel UC-1 Boundary

Note: Sample locations are 10 feet from center location.

N

0 30 60

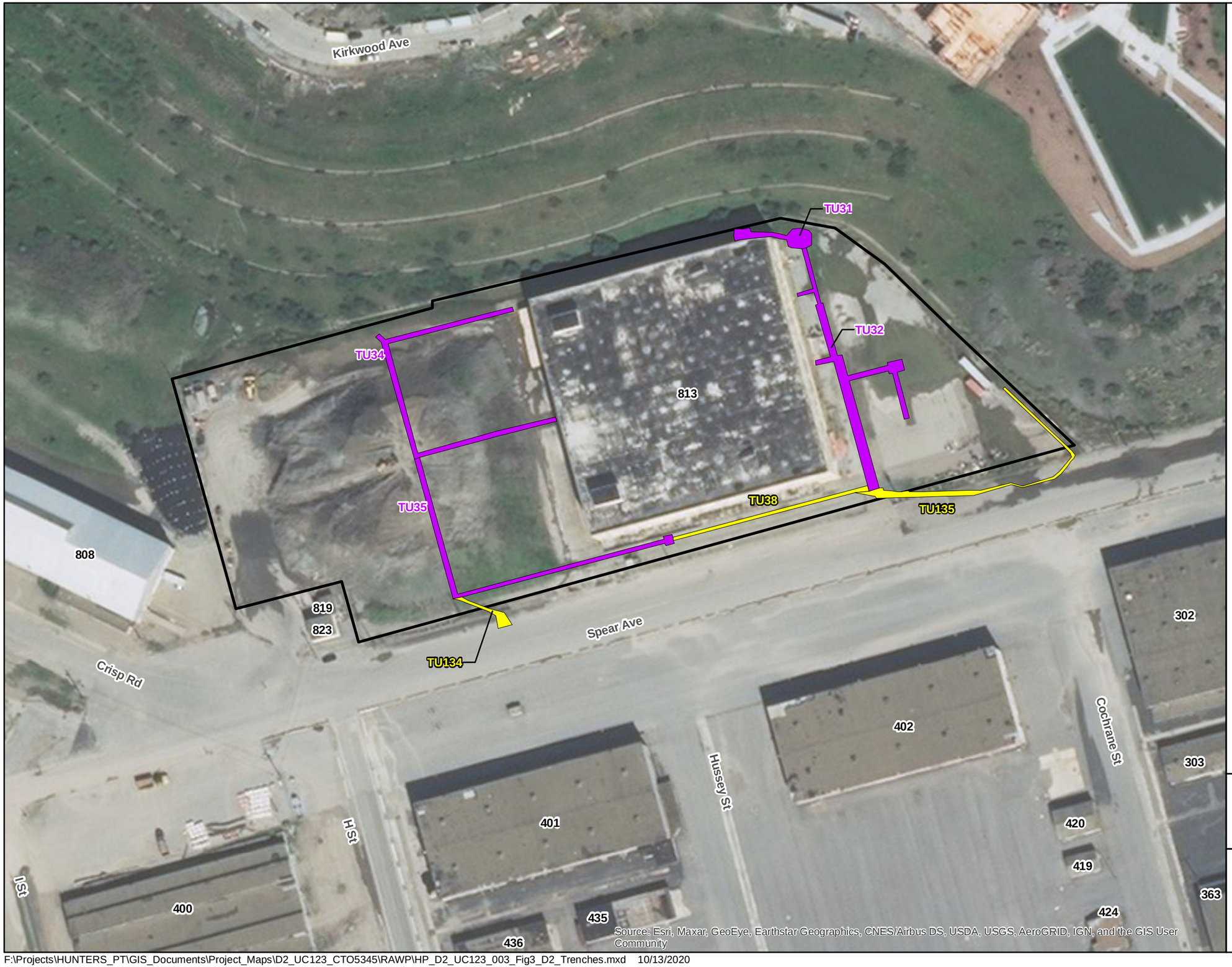
Feet

U.S. Department of the Navy
BRAC PMO West
San Diego, California

FIGURE 10
PROPOSED FISCHER AND SPEAR AVENUE SOIL SAMPLE LOCATIONS FOR CESIUM 137

RADIOLOGICAL CONFIRMATION SAMPLING AND SURVEY
AT PARCELS D-2, UC-1, UC-2, AND UC-3
HUNTERS POINT NAVAL SHIPYARD, SAN FRANSISCO, CA

F:\Projects\HUNTERS_PT\GIS_Documents\Project_Maps\D2_UC123_CTO5345\SAP\HP_D2_UC123_008_Fig10_Cesium137_Proposed.mxd 10/19/2020



Phase 1 Trench Unit

Phase 2 Trench Unit

Parcel D-2 Boundary

Note: Trench boundaries are approximate. Actual boundaries will be determined in the field using as-built drawings.

N

0 100 200 Feet

U.S. Department of the Navy
BRAC PMO West
San Diego, California

FIGURE 2
SOIL AND BUILDING SITES
PARCEL D-2 (PHASE 1, PHASE 2, AND BUILDING SURVEY AREAS)

RADIOLOGICAL CONFIRMATION SAMPLING AND SURVEY
AT PARCELS D-2, UC-1, UC-2, AND UC-3
HUNTERS POINT NAVAL SHIPYARD, SAN FRANSISCO, CA

F:\Projects\HUNTERS_PT\GIS_Documents\Project_Maps\D2_UC123_CTO5345\RAWP\HP_D2_UC123_003_Fig3_D2_Trenches.mxd 10/13/2020

Phase 1 Trench Unit
Phase 2 Trench Unit
Parcel UC-2 Boundary

Note: Trench boundaries are approximate. Actual boundaries will be determined in the field using as-built drawings.

N

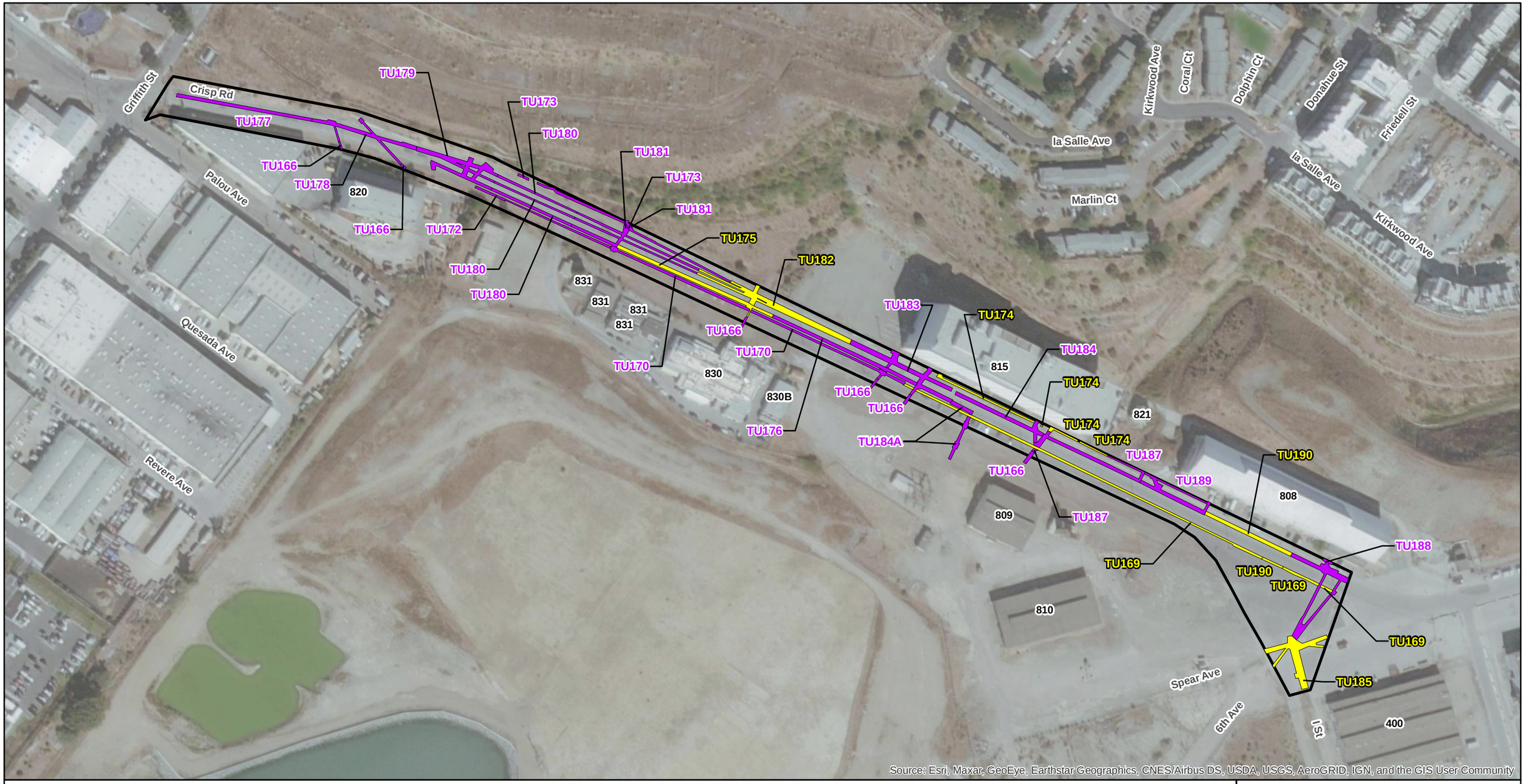
0 90 180
Feet

U.S. Department of the Navy
BRAC PMO West
San Diego, California

FIGURE 4
SOIL SITE PARCEL UC-2
(PHASE 1 AND PHASE 2 AREAS)

RADIOLOGICAL CONFIRMATION SAMPLING AND SURVEY
AT PARCELS D-2, UC-1, UC-2, AND UC-3
HUNTERS POINT NAVAL SHIPYARD, SAN FRANSISCO, CA

F:\Projects\HUNTERS_PT\GIS_Documents\Project_Maps\D2_UC123_CTO5345\RAWP\HP_D2_UC123_005_Fig5_UC2_Trenches.mxd 10/13/2020



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Phase 1 Trench Unit
Phase 2 Trench Unit
Parcel UC-3 Boundary

Note: Trench boundaries are approximate. Actual boundaries will be determined in the field using as-built drawings.

N

0 200 400 Feet

U.S. Department of the Navy
BRAC PMO West
San Diego, California

FIGURE 5
SOIL SITE PARCEL UC-3
(PHASE 1 AND PHASE 2 AREAS)

RADIOLOGICAL CONFIRMATION SAMPLING AND SURVEY
AT PARCELS D-2, UC-1, UC-2, AND UC-3
HUNTERS POINT NAVAL SHIPYARD, SAN FRANSISCO, CA

F:\Projects\HUNTERS_PT\GIS_Documents\Project_Maps\D2_UC123_CTO5345\RAWP\HP_D2_UC123_006_Fig6_UC3_Trenches.mxd 10/15/2020

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX F

DRAFT FINAL
STORMWATER MANAGEMENT PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

DCN: APTM-0006-5345-0009

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX F

DRAFT FINAL
STORMWATER MANAGEMENT PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Aptim Federal Services, LLC
4005 Port Chicago Highway, Suite 200
Concord, CA 94520

Contract Number: N62473-17-D-0006; Contract Task Order: N6247318F5345
DCN: APTM-0006-5345-0009

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX F

DRAFT FINAL
STORMWATER MANAGEMENT PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

Owen Chao, PE, QSD
Senior Engineer

Date

Nels Johnson, PE, PMP
Project Manager

Date

DCN: APTM-0006-5345-0009

Table of Contents

LIST OF FIGURES ..... **III**
LIST OF TABLES ..... **III**
LIST OF ATTACHMENTS ..... **III**
ACRONYMS AND ABBREVIATIONS ..... **IV**

1.0 INTRODUCTION **1-1**
1.1 Objectives 1-1
1.2 Substantive Compliance 1-2
1.3 Stormwater Management Plan Availability and Implementation 1-2
1.4 Stormwater Management Plan Amendments 1-2
1.5 Retention of Records 1-3
1.6 Notice of Termination 1-3
2.0 PROJECT INFORMATION **2-1**
2.1 Site Description and Background 2-1
2.1.1 Topography and Site Features 2-1
2.1.2 Climate and Precipitation 2-1
2.2 Construction Activities and Proposed Schedule 2-2
2.2.1 Mobilization 2-2
2.2.2 Stockpiles 2-2
2.2.3 Hazardous Materials Storage 2-2
2.2.4 Fueling of Construction Equipment 2-3
2.2.5 Maintenance of Backfill Material Stockpiles 2-3
2.3 Stormwater Run-on from Off-site Areas 2-3
2.4 Site Risk Determination: Risk Level 1 2-3
2.5 Potential Construction Site Pollutant Sources 2-3
2.5.1 Non-Particulate Pollutants 2-4
2.5.2 Particulate Pollutants 2-4
2.6 Identification of Non-Stormwater Discharges 2-4
3.0 BEST MANAGEMENT PRACTICES **3-1**
3.1 Schedule for Best Management Practices Installation 3-1
3.2 Best Management Practices to be Implemented for Erosion Control (EC) 3-1
3.2.1 Scheduling (EC-1) 3-1
3.2.2 Soil Binders (EC-5) 3-1
3.2.3 Geotextiles and Mats (EC-7) 3-1
3.3 Best Management Practices to be Implemented for Sediment Control (SE) 3-1
3.3.1 Silt Fence (SE-1) 3-2
3.3.2 Fiber Rolls (SE-5) 3-2
3.3.3 Gravel Bag Berm (SE-6) 3-2
3.3.4 Street Sweeping and Vacuuming (SE-7) 3-2
3.3.5 Sandbag Barrier (SE-8) 3-2
3.3.6 Straw Bale Barrier (SE-9) 3-3
3.3.7 Storm Drain Inlet Protection (SE-10) 3-3
3.4 Best Management Practices to be Implemented for Wind Erosion Control (WE) 3-3
3.4.1 Wind Erosion Control (WE-1) 3-3

Table of Contents (continued)

3.5 Best Management Practices to be Implemented for Tracking Control (TC) 3-4
3.5.1 Stabilized Construction Entrance/Exit (TC-1) 3-4
3.5.2 Stabilized Construction Roadway (TC-2) 3-4
3.6 Best Management Practices to be Implemented for Non-Stormwater Management (NS) 3-4
3.6.1 Water Conservation Practices (NS-1) 3-5
3.6.2 Paving and Grinding Operations (NS-3) 3-5
3.6.3 Illicit Connection/Discharge (NS-6) 3-5
3.6.4 Vehicle and Equipment Cleaning (NS-8) 3-5
3.6.5 Vehicle and Equipment Fueling (NS-9) 3-5
3.6.5.1 Diesel Fuel 3-5
3.6.5.2 Gasoline and Vehicle-Related Lubricants 3-6
3.6.6 Vehicle and Equipment Maintenance (NS-10) 3-6
3.6.7 Concrete Curing (NS-12) 3-6
3.7 Best Management Practices to be Implemented for Waste Management and Materials Pollution Control (WM) 3-6
3.7.1 Material Delivery and Storage (WM-1) 3-7
3.7.2 Material Use (WM-2) 3-7
3.7.3 Stockpile Management (WM-3) 3-7
3.7.4 Spill Prevention and Control (WM-4) 3-7
3.7.5 Solid Waste Management (WM-5) 3-8
3.7.6 Hazardous Waste Management (WM-6) 3-8
3.7.7 Contaminated Soil Management (WM-7) 3-8
3.7.8 Concrete Waste Management (WM-8) 3-8
3.7.9 Sanitary/Septic Waste Management (WM-9) 3-8
3.8 Post-Construction Stormwater Management Measures 3-8
4.0 BEST MANAGEMENT PRACTICE INSPECTION, MAINTENANCE, REPAIR, AND RAIN EVENT ACTION PLANS 4-1
4.1 Best Management Practice Inspection 4-1
4.2 Best Management Practice Maintenance and Repair 4-1
5.0 TRAINING 5-1
6.0 RESPONSIBLE PARTIES AND OPERATORS 6-1
6.1 Responsible Parties 6-1
6.2 Contractor List 6-1
7.0 CONSTRUCTION SITE MONITORING PROGRAM 7-1
7.1 Risk Level 1 Requirements 7-1
7.2 Monitoring Locations 7-1
7.3 Safety 7-1
7.4 Visual Monitoring (Inspections) 7-1
7.5 Water Quality Sampling and Analysis 7-2
7.5.1 Sampling and Analysis for Non-visible Pollutants 7-2
7.5.1.1 Sampling Procedure 7-2
7.5.2 Sample Custody and Documentation 7-3
7.5.3 Sample Numbering and Labeling 7-3
7.5.4 Sampling Containers, Preservatives, and Holding Times 7-4
7.5.5 Sample Packaging and Shipment 7-4
7.5.6 Quality Assurance 7-4
8.0 UPDATING THE STORMWATER MANAGEMENT PLAN 8-1
9.0 REFERENCES 9-1

List of Figures

Figure 1 Stormwater Management, Parcels D-2, UC-1, UC-2, and UC-3

List of Tables

Table 1 Total Monthly Rainfall Amounts (inches), San Francisco, California
Table 2 Schedule for Best Management Practice Installation
Table 3 Responsible Contractor Personnel
Table 4 Water Sampling Containers, Preservatives, and Holding Times

List of Attachments

Attachment 1 General Permit
Attachment 2 Risk Level Determination
Attachment 3 Best Management Practices Fact Sheets
Attachment 4 Site Inspection Checklist

Acronyms and Abbreviations

APP/SSHP	*Final Accident Prevention Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California*
APTIM	Aptim Federal Services, LLC
ARAR	applicable or relevant and appropriate requirement
BMP	best management practice
CoC	chain-of-custody
CSMP	Construction Site Monitoring Program
CSO	Caretaker Site Office
EPA	U.S. Environmental Protection Agency
General Permit	*National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities*, Order No. 2009-0009-DWQ, as amended by Order No. 2012-0006-DWQ, NPDES No. CAS000002
HPNS	Former Hunters Point Naval Shipyard
Navy	U.S. Department of the Navy
QC	quality control
QSD	Qualified Stormwater Pollution Prevention Plan Developer
QSP	Qualified Stormwater Pollution Prevention Plan Practitioner
Regional Water Board	Regional Water Quality Control Board, San Francisco Bay Region
ROICC	Resident Officer in Charge of Construction
RUSLE	Revised Universal Soil Loss Equation
SF Bay	San Francisco Bay
SWMP	stormwater management plan
SWRCB	State Water Resources Control Board
WMP	waste management plan
WP	work plan

1.0 INTRODUCTION

This stormwater management plan (SWMP) presents the substantive measures that will be implemented by Aptim Federal Services, LLC (APTIM) to minimize sediment and other pollutants in stormwater discharges during the radiological removal activities work at Parcels D-2, UC-1, UC-2, and UC-3, former Hunters Point Naval Shipyard (HPNS), in San Francisco, California (Figure 1). The radiological removal includes soil excavation, radiological characterization of excavated soil, final status survey, direct-push technology for subsurface soil samples, and site restoration.

The U.S. Department of the Navy (Navy) will implement the substantive provisions of *National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities*, Order No. 2009-0009-DWQ, as amended by Order No. 2012-0006-DWQ, NPDES No. CAS000002 (General Permit; State Water Resources Control Board [SWRCB], 2012) (Attachment 1) in order to comply with federal Clean Water Act applicable or relevant and appropriate requirements (ARARs) and water quality state ARARs for discharge to surface water.

1.1 Objectives

This SWMP addresses the following objectives:

- Pollutants and their sources, including sources of sediment associated with construction, construction site erosion, and other activities associated with construction activity are controlled.
- Where not otherwise required to be under a SWRCB or Regional Water Quality Control Board, San Francisco Bay (SF Bay) Region (Regional Water Board), permit, non-stormwater discharges are identified and eliminated, controlled, or treated.
- Site best management practices (BMPs) are effective and reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the best available technology/best control technology standard.
- Calculations and design details, as well as BMP controls for site run-on, are complete and correct.
- Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.
- Identify and provide methods to implement BMP inspection, visual monitoring, and construction site monitoring program (CSMP) requirements to comply with the General Permit (SWRCB, 2012).

1.2 Substantive Compliance

Because these radiological removal activities are an on-site response action defined by Comprehensive Environmental Response, Compensation, and Liability Act of 1980, a Notice of Intent, a Legally Responsible Party Certification Statement, a Waste Discharge Identification Number, a Notice of Termination, and other procedural requirements of the General Permit (SWRCB, 2012) are not ARARs and the Navy is not subject to them. Under Comprehensive Environmental Response, Compensation, and Liability Act of 1980, the federal government is also exempt from paying permit fees (e.g., annual permit fee).

The Navy and APTIM are responsible for abiding by the substantive requirements of the General Permit (SWRCB, 2012), including performing a risk assessment, preparing a site map, implementing BMPs, and complying with substantive federal and state requirements during construction.

1.3 Stormwater Management Plan Availability and Implementation

This SWMP will be available at the construction site during working hours while construction is occurring and will be made available upon request by a state or municipal inspector. When the original SWMP is retained by a crew member in a construction vehicle and is not currently at the construction site, current copies of the BMPs and maps and drawings will be left with the field crew and the original SWMP will be made available via a request by radio or telephone. This SWMP will be implemented concurrently with the start of ground-disturbing activities.

1.4 Stormwater Management Plan Amendments

This SWMP will be amended or revised by a Qualified Stormwater Pollution Prevention Plan Developer (QSD) when:

- There is a reduction or increase in total disturbed acreage.
- BMPs do not meet the objectives of reducing or eliminating pollutants in stormwater discharges.
- There is a change in construction or operations that may affect the discharge of pollutant to surface waters, groundwater, or a municipal separate storm sewer system.
- There is a change in the project duration that changes the project's risk level.
- Deemed necessary by the QSD or Qualified Stormwater Pollution Prevention Plan Practitioner (QSP).

The following items will be included in each amendment:

- Who requested the amendment
- Location of the proposed change

- Reason for the change
- Original BMP proposed (if any)
- New BMP proposed

Amendments will be logged at the front of this SWMP. This SWMP text will be revised, replaced, and/or hand annotated as necessary to properly convey the amendment.

1.5 Retention of Records

Following completion of the construction phase of the project, original SWMP implementation records will be transferred to APTIM's corporate office for storage and SWMP documentation will be included in the federal government's Environmental Restoration Program Record File (as part of the remedial action completion report).

1.6 Notice of Termination

APTIM will prepare a final site map and take photographs to verify that SWMP requirements have been met. The final site map and photographs will be submitted to the Federal Facilities Agreement signatories following completion of the construction project and within 90 days of meeting requirements for termination and final stabilization, including the following:

- The site will not pose additional sediment discharge risk than it did prior to construction activities
- Construction-related equipment, materials, and temporary BMPs no longer needed are removed from the site
- Post-construction stormwater management measures are installed

APTIM will demonstrate (through photographs, Revised Universal Soil Loss Equation (RUSLE) results, or one of the following methods has achieved results of testing and analysis) that site stabilization, as previously defined:

- 70 percent final cover method (no computational proof required)
- RUSLE/RUSLE2 method (computational proof required)
- Custom method (discharger demonstrates that site complies with final stabilization)

2.0 PROJECT INFORMATION

This subsection discusses project information, including site description and background, construction activities and proposed schedule, stormwater run-on from off-site area, site risk determination, potential construction site pollutant sources, and identification of non-stormwater discharges.

2.1 Site Description and Background

HPNS is located in San Francisco, California (Figure 1). The overall HPNS property encompasses approximately 853 acres on a peninsula that extends into SF Bay in the southeastern portion of San Francisco. HPNS is divided into 11 parcels: B, C, D-1, D-2, E, E-2, F, G, UC-1, UC-2, and UC-3. Parcel D-2 consists of approximately 5.32 acres located north of Parcel G in HPNS. Building 813 is a 68,644-square-foot, four-story warehouse, with two open-front sheds on the west side of Building 813. Building 819 is located on the western end of Parcel UC-1 and is approximately 1,315.1 square feet with two rooms ("Dry Well" and "Wet Well"), which are each approximately 20 feet in depth. Parcel UC-1 is approximately 3.9 acres in area and extends the length of Spear Avenue. Parcel UC-2 is approximately 3.9 acres in area and encompasses a section of Robinson Street and the length of Fisher Avenue. Parcel UC-3 is approximately 11.2 acres and extends the length of Crisp Road at HPNS.

2.1.1 Topography and Site Features

Parcels D-2, UC-1, UC-2, and UC-3 have a relatively flat topography. It was mostly constructed by placing borrowed fill material from the surrounding hills along the margin of the SF Bay. Most of Parcels D-2, UC-1, UC-2, and UC-3 consists of asphalt or concrete surfaces. Surface runoff from Parcels D-2, UC-1, and UC-3 flows easterly/southeasterly toward Parcel G. Surface runoff from Parcel UC-2 flows southwesterly toward Parcel G. From Parcel G, the surface runoff drains into the designated storm drains via surface swales where it is then discharged to the SF Bay.

2.1.2 Climate and Precipitation

The climate in the project area is Mediterranean (National Oceanic and Atmospheric Administration Division CA 04: Central Coast) with moderate year-round temperatures and a rainy winter season. The average annual rainfall at that location had a mean of 23.80 inches per year (Table 1). Most precipitation occurs from November through March.

2.2 Construction Activities and Proposed Schedule

Intrusive construction activities are scheduled to commence in April 2021. The estimated duration of field activities is approximately sixteen months, with a completion date of August 2022. Primary construction activities will include the following, in this general chronologic order (though several tasks will overlap):

1. Establishing site and environmental controls, including placement of fences and stormwater BMPs and other mobilization activities
2. Soil excavation
3. Soil processing, staging, and soil sampling
4. Investigation by direct-push technology
5. Waste consolidation, backfilling, and site restoration
6. Transportation and disposal
7. Demobilization

2.2.1 Mobilization

Mobilization will include installing security fencing and stormwater runoff controls, moving equipment and materials to the site, establishing bermed lay down areas, marking and surveying for utilities, and conducting topographic surveys.

Fencing and appropriate perimeter BMPs will be installed along the perimeter of fenced work areas prior to the start of excavation activities. Fiber rolls, silt fences, and/or sandbags will be installed along the fenced perimeter to prevent stormwater from entering or leaving project work zones (Figure 1). The BMPs will minimize or prevent sediment entrainment in runoff entering the SF Bay.

2.2.2 Stockpiles

Soil stockpiles will be laid onto plastic sheeting and bermed to prevent run-on from eroding the piles and to collect runoff. Stockpiled soil may be sprayed with spray-on fixatives (such as Gorilla Snot®) and/or other measures to prevent erosion and generation of dust consistent with the dust management and air monitoring plan (Appendix E). Active stockpiles will be stabilized daily. Locations of stockpiles will be determined as work progresses. Proposed stockpile areas will be coordinated with the Caretaker Site Office (CSO) Representative and Resident Officer in Charge of Construction (ROICC).

2.2.3 Hazardous Materials Storage

Hazardous materials will be stored in a central area located at least 100 feet from surface waters. Hazardous material storage containers will be stored and labeled properly when not in use and will be placed in a designated area within an enclosed building structure, an appropriate storage cabinet, or secondary containment structure to reduce the risks of fire and releases.

2.2.4 Fueling of Construction Equipment

Construction equipment refueling operations will be conducted in one or more designated areas located at least 100 feet from surface water bodies (Figure 1). Refueling operations will be supervised, and appropriate spill control equipment will be available on site in the event of a release. Proximal storm sewer inlets will also be covered during the refueling or hazardous material transfer operations.

2.2.5 Maintenance of Backfill Material Stockpiles

Approved materials to be used for backfill will be bermed to prevent runoff of sediment during heavy rainfall events. Stockpiled backfill soil (not used for more than seven days) may be sprayed with spray-on fixatives (such as Gorilla Snot®) and/or other measures to prevent erosion and generation of dust consistent with the dust management and air monitoring plan (Appendix E). Locations of stockpiles will be determined as work progresses. Proposed stockpile areas will be coordinated with the CSO Representative and ROICC.

2.3 Stormwater Run-on from Off-site Areas

Parcels D-2, UC-1, UC-2, and UC-3 are completely bordered by other HPNS lands to the north, west, south, and east (Figure 1). Stormwater runoff from the adjoining HPNS lands is collected via a combined sewer system managed by the San Francisco Public Utilities Commission, or by several swales constructed by Navy contractors, directing flow to the nearest intact storm drain inlets. Stormwater from the Parcels D-2, UC-1, UC-2, and UC-3 flows as sheet flow to swales, which drain to the SF Bay.

Significant stormwater run-on from off-site areas is not anticipated. Stormwater from the open space flows as sheet flow to the SF Bay during rain events.

2.4 Site Risk Determination: Risk Level 1

The site risk level was determined using the geographic information system map methodology provided in Appendix 1 of the General Permit (SWRCB, 2012) (Attachment 1).

The site-specific sediment risk was determined as low risk. The receiving water risk was determined as low risk because there is no U.S. Environmental Protection Agency (EPA)-approved total maximum daily load implementation plan for SF Bay for sediment, and the SF Bay has only the existing beneficial use of fish migration and spawning (Regional Water Board, 2007).

The combined risk level was determined to be Risk Level 1.

2.5 Potential Construction Site Pollutant Sources

This subsection describes potential pollutant sources associated with the remedial activities.

2.5.1 Non-Particulate Pollutants

On-site project construction materials that have the potential to contribute non-sediment pollutants to stormwater runoff include the following:

- Diesel fuel
- Motor oil
- Lubricants including hydraulic fluid
- Debris

Fuel, oil, and lubricants will be stored in approved containers on vehicles and/or approved containers or storage cabinets located within buildings or conex boxes. Acutely hazardous materials will not be used or stored on site during construction. Thorough cleaning as soon as a spill occurs will mitigate spills or drips of the previously mentioned materials. If a spill occurs on soil, the area will be excavated and the material containerized pending proper off-site disposal. The Construction Manager will be notified and, if necessary, containment will be provided. See the BMP list (Attachment 3) for maintenance and fueling operations.

2.5.2 Particulate Pollutants

Construction activities that have the potential to contribute sediment to stormwater discharges include the following:

- Removal of asphalt
- Earthmoving including excavation, loading or other transfer of soil, backfilling, and restorative grading
- Soil sorting operations
- Stockpile maintenance

Dust control measures (such as spraying of water or applying of fixatives) will be used as appropriate to prevent stockpile erosion and stabilize exposed loads of soil during transfer.

2.6 Identification of Non-Stormwater Discharges

This project will not have non-stormwater discharges. Section 3.6 describes non-stormwater management BMPs.

3.0 BEST MANAGEMENT PRACTICES

This section discusses selection of BMPs. Figure 1 shows stormwater management control systems to be implemented during site activities.

3.1 Schedule for Best Management Practices Installation

Table 2 lists the schedule for BMP installation.

3.2 Best Management Practices to be Implemented for Erosion Control (EC)

Erosion control are source control practices that protects the soil surface and prevents soil particles from being detached by rainfall, flowing water, or wind. Erosion control BMPs were selected based on minimizing disturbed areas, stabilizing disturbed areas, and protecting slopes and natural drainage channels. BMPs were also selected based on specific site conditions and construction activities. Attachment 3 provides BMP fact sheets. Selected BMPs include the following:

- Scheduling (EC-1)
- Soil Binders (EC-5)
- Geotextiles and Mats (EC-7)

3.2.1 Scheduling (EC-1)

Work activities will be sequenced to minimize the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

3.2.2 Soil Binders (EC-5)

Soil binders (Gorilla Snot® or equivalent) may be applied to stockpiled and disturbed soil to temporarily prevent water and wind erosion. Stockpile management will rely primarily on impervious flexible sheeting (such as high-density polyethylene or polyethylene) suitable for outdoor application.

3.2.3 Geotextiles and Mats (EC-7)

The soil stockpiles will be laid onto plastic sheeting (such as high-density polyethylene or polyethylene suitable for outdoor application) to prevent infiltration of contamination and bermed.

3.3 Best Management Practices to be Implemented for Sediment Control (SE)

Sediment controls are structural measures that are intended to complement and enhance the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment control BMPs were selected based on retaining sediment on site and controlling the site perimeter.

BMPs were also selected based on specific site conditions and construction activities. These BMPs are described here. Attachment 3 provides BMP fact sheets. Selected BMPs include the following:

- Silt Fence (SE-1)
- Fiber Rolls (SE-5)
- Gravel Bag Berm (SE-6)
- Street Sweeping and Vacuuming (SE-7)
- Sandbag Barrier (SE-8)
- Straw Bale Barrier (SE-9)
- Storm Drain Inlet Protection (SE-10)

3.3.1 Silt Fence (SE-1)

Silt fence may be used as a temporary sediment trapping/filtering device downgradient of disturbed areas where sheet flow occurs on unpaved surfaces. Silt fences will only be installed on level contour unpaved surfaces receiving no more than 1 acre of runoff per 100 linear feet or 0.5 cubic feet per second of concentrated flow draining to points along the silt fence.

3.3.2 Fiber Rolls (SE-5)

If fiber rolls are used, they will consist of burlap rolls, or other less impactful biodegradable products, and will be monitored on a daily basis to ensure wildlife does not become entangled, and to ensure erosion control measures remain effective. When placed at the toe of slopes, fiber rolls may be used to intercept runoff and reduce its flow velocity, release runoff as sheet flow, and remove sediment from runoff. Fiber rolls are expected to be used as the primary perimeter BMP for the project.

3.3.3 Gravel Bag Berm (SE-6)

Gravel bag berms are constructed from gravel-filled bags placed on top and in line with each other to create a small wall or berm. These berms intercept sheet flow, allow sediment to settle out, and release runoff slowly as sheet flows, preventing erosion.

3.3.4 Street Sweeping and Vacuuming (SE-7)

Street sweeping and vacuuming include the use of self-propelled and walk-behind equipment to remove sediment from streets and roadways. Sweeping and vacuuming prevent sediment from the project site from entering storm drains or receiving waters. Street sweeping and vacuuming will be used, if needed, in consideration with use of watering for dust control.

3.3.5 Sandbag Barrier (SE-8)

A sandbag barrier is a series of sand-filled bags placed on level contours to intercept sheet flows. Sandbag barriers pond sheet flow runoff, allowing sediment to settle out. Sandbag barriers are similar to

gravel bag berms but are less permeable and, therefore, more effective in reducing surface water velocity. The sand/gravel bags will be installed on level contours receiving drainage areas up to 1 acre and in areas of concentrated flows and drainage courses. Sand bags are expected to be used to anchor filter fabric over drop inlets and fiber rolls along site perimeter.

3.3.6 Straw Bale Barrier (SE-9)

Straw bale barriers consist of a series of secured, anchored bales placed to intercept and filter sediment-laden runoff from small areas of disturbed soil. Straw bales may be used on site in place of sand/gravel bags and silt fencing around stockpile areas and downgradient of active areas where excess sediment may be expected. Straw bales may be required along the site perimeter if the fiber rolls and/or silt fencing does not provide adequate sediment filtration as determined by the QSP.

3.3.7 Storm Drain Inlet Protection (SE-10)

Storm drains in the vicinity of work areas will be protected by installing filter fabric over the drain inlet cover. The fabric will retain sediment from water flows through it into the storm drain, to decrease sediment reaching discharge points.

3.4 Best Management Practices to be Implemented for Wind Erosion Control (WE)

Wind erosion controls consist of applying water or dust palliatives to prevent or alleviate dust nuisance. Attachment 3 provides fact sheets. The selected BMP is Wind Erosion Control (WE-1).

3.4.1 Wind Erosion Control (WE-1)

Wind erosion or dust control measures will be used to stabilize particulate materials (e.g., soil) from wind erosion and to reduce dust. Dust may be generated by the following construction activities:

- Clearing and grading
- Construction vehicle traffic on unpaved areas
- Sediment tracking onto paved roads
- Excavation
- Soil sorting operations
- Material stockpiles
- Subgrade preparation
- Site restoration

Water trucks will be used for dust control. The source of water for the truck will be the city public water supply system. Other preventative measures for dust control include minimizing disturbed surface areas,

limiting on-site vehicular traffic and speed, and limiting or ceasing work at times of sustained high winds. Dust control is further addressed in the dust management and air monitoring plan (Appendix E).

3.5 Best Management Practices to be Implemented for Tracking Control (TC)

Tracking control consists of preventing or reducing the tracking of sediment by vehicles leaving the construction area. Relevant BMPs are further described in this subsection and Attachment 3 provides fact sheets. Selected BMPs include the following:

- Stabilized Construction Entrance/Exit (TC-1)
- Stabilized Construction Roadway (TC-2)

3.5.1 Stabilized Construction Entrance/Exit (TC-1)

To help prevent and mitigate off-site tracking of sediment, stabilized construction entrances/exits may be constructed at entry and exit points to the site where necessary. Stabilized construction entrances/exits should be constructed on level ground, be a minimum of 6 inches deep, and include aggregate of approximately 1 to 3 inches in diameter. An entrance/exit should be approximately 50 feet in length by 30 feet in width or otherwise large enough to fully contain the maximum plausible size of a vehicle expected to exit the site. The entrance may require periodic top dressing with additional rock and should be used in conjunction with street sweeping where the entrance meets the road.

3.5.2 Stabilized Construction Roadway (TC-2)

Access roads, haul roads, and other on-site vehicle transportation routes will be stabilized immediately after grading and will be maintained as necessary to control dust.

3.6 Best Management Practices to be Implemented for Non-Stormwater Management (NS)

Non-stormwater management BMPs are source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source and eliminating off-site discharge. These BMPs are also referred to as “good housekeeping practices.” Attachment 3 provides fact sheets. Selected BMPs include the following:

- Water Conservation Practices (NS-1)
- Paving and Grinding Operations (NS-3)
- Illicit Connection/Discharge (NS-6)
- Vehicle and Equipment Cleaning (NS-8)
- Vehicle and Equipment Fueling (NS-9)
- Vehicle and Equipment Maintenance (NS-10)

- Concrete Curing (NS-12)

3.6.1 Water Conservation Practices (NS-1)

Water will only be used during this project for dust suppression. Water conservation practices include keeping water equipment in good working condition, repairing leaks, and stabilizing the water truck filling area. If required, a minimal amount of water will be used to clean the construction area. Heavy equipment will be cleaned by dry brush methods where feasible.

3.6.2 Paving and Grinding Operations (NS-3)

At the completion of construction activities, the site will be restored "in kind" to grade and conditions equal to original conditions. There will be areas where new asphalt concrete will be placed. Efforts will be made to prevent or reduce the discharge of potential pollutants from paving operations, including using measures to prevent run-on and runoff pollution, properly disposing of waste, and providing training to employees and subcontractors.

3.6.3 Illicit Connection/Discharge (NS-6)

Inspections will be routinely conducted as part of this SWMP. Observations of illicit connections, illegal dumping or discharges will be documented, and the Navy will be immediately notified.

3.6.4 Vehicle and Equipment Cleaning (NS-8)

Vehicle and equipment cleaning and decontamination will only be performed in designated, contained areas. A decontamination pad may be constructed in a designated area within HPNS Parcels D-2, UC-1, UC-2, and UC-3. The decontamination pad liner will be bermed with sandbags and will contain a sump basin to collect and facilitate removal of waters within the pad. Runoff/decontamination water will be containerized for proper characterization and disposal.

3.6.5 Vehicle and Equipment Fueling (NS-9)

Vehicle and equipment fueling procedures and practices are designed to prevent fuel spills and leaks and reduce or eliminate contamination of stormwater.

3.6.5.1 Diesel Fuel

During construction activities, diesel fuel will be delivered to the site and pumped directly into equipment. Fueling will occur in designated areas located away from drainage courses, to prevent the run-on of stormwater and the runoff of spills. If a spill occurs on soil, the area will be excavated and the material containerized pending proper off-site disposal. If required, the spill will be contained by an earth berm and/or excavation retention trap pending removal of soil. The Construction Manager will be notified. The individual who observes the spill is responsible for contacting the Construction Manager. APTIM will notify the Navy, who in turn is responsible for notifying regulatory authorities, as necessary. The Construction Manager is also responsible for managing the cleanup and removal of contaminated soil in accordance with regulations.

3.6.5.2 Gasoline and Vehicle-Related Lubricants

Gasoline used for passenger vehicles and trucks will typically be obtained from licensed filling stations off site. If a spill occurs during on-site fueling activities, the fueler will be responsible for contacting the Construction Manager and supporting cleanup and removal of contaminated soil.

Heavy equipment and vehicles will be inspected at the beginning and end of each workday for oil and lubricant leaks. Leaking equipment will be repaired or taken out of service. Small leaks will be cleaned up immediately. Excessive greasing of components will be avoided and accumulated grease will be wiped off and contaminated rags properly disposed of off site. Small volumes of oil and lubricant supplies will be securely stored in drums or bins to prevent an uncontrolled discharge of materials.

3.6.6 Vehicle and Equipment Maintenance (NS-10)

Heavy equipment oil changes and maintenance may be performed on site. In the event that a spill of diesel, hydraulic fluid, or gas occurs in association with aspects of heavy equipment use, containment will be provided and the Construction Manager will be notified. The spill area will be excavated and the material containerized pending proper off-site disposal.

3.6.7 Concrete Curing (NS-12)

Concrete and its associated curing materials have basic chemical properties that can raise the pH of water to levels outside of the permitted range. Discharge of stormwater and non-stormwater exposed to concrete during curing may have a high pH and may contain chemicals, metals, and fines. Wet blankets/carpets will be utilized to maintain moisture while minimizing the use and possible discharge of water.

Concrete will not be poured in the rain or on standing water. If a rainfall event (0.5 inches or more precipitation) is predicted, newly poured concrete (i.e., poured within 48 hours of predicted rainfall) will be covered with plastic sheeting and/or stormwater flow will be directed away from the new concrete with sand bags, straw wattles or equivalent.

3.7 Best Management Practices to be Implemented for Waste Management and Materials Pollution Control (WM)

The following BMPs have been selected to handle materials and control construction site wastes and Attachment 3 provides BMP fact sheets:

- Material Delivery and Storage (WM-1)
- Material Use (WM-2)
- Stockpile Management (WM-3)
- Spill Prevention and Control (WM-4)
- Solid Waste Management (WM-5)

- Hazardous Waste Management (WM-6)
- Contaminated Soil Management (WM-7)
- Concrete Waste management (WM-8)
- Sanitary/Septic Waste Management (WM-9)

3.7.1 Material Delivery and Storage (WM-1)

Petroleum products (such as fuel, oil, and grease) will be properly stored in designated areas. Storage areas will have secondary containment and be inspected regularly.

3.7.2 Material Use (WM-2)

Heavy equipment oil changes and maintenance may be performed on site. In the event that a spill of diesel, hydraulic fluid, or gas occurs in association with aspects of heavy equipment use, containment will be provided and the Construction Manager will be notified. The spill area will be excavated and the material containerized pending proper off-site disposal.

3.7.3 Stockpile Management (WM-3)

Soil stockpile management may include use of the following:

- Soil binders (EC-5)
- Geotextile and mats (EC-7)
- Placement of fiber roll and/or sand bag around stockpiles (SE-5 and SE-8)
- Silt fencing on the downgradient toe of stockpile slopes (SE-1)
- Wind erosion/dust control (WE-1)

Stockpiles will be sloped to encourage sheet flow. Soil binders or impervious soil covers will be deployed over the stockpiles at the end of each day and during rainy weather and/or windy conditions.

3.7.4 Spill Prevention and Control (WM-4)

The work at the site will be conducted while adhering to specific procedures developed by APTIM, including but not limited to the procedures outlined in the waste management plan (WMP) (work plan [WP] Section 7.0) as well as the standalone *Final Accident Prevention Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California* (APP/SSHP; APTIM, 2019). These documents will be maintained on site and outline the specific steps to be followed in the event of a spill or release.

If a spill is discovered, including a BMP failure, it must immediately be contained and cleaned up, and the source of the leak repaired. The Project Manager, Navy Remedial Project Manager, CSO Representative, and ROICC will be notified of reportable spills and releases. Navy representatives will be

advised to notify the Regional Water Board within 24 hours of the spill or leak. The QSP and/or QSD will determine what additional BMPs will need to be implemented to prevent future spills. If a spill occurs and threatens to contaminate stormwater generated at the site, monitoring and sampling must be conducted (Section 7.5).

3.7.5 Solid Waste Management (WM-5)

Construction waste that is non-hazardous will be direct-loaded into appropriate vehicles or placed into covered dumpsters, roll-off bins, or other similarly approved containers placed in designated locations. Specific procedures to handle types of waste expected at the site have been developed and are included in the WMP (WP Section 7.0). The WP will be maintained at the site.

3.7.6 Hazardous Waste Management (WM-6)

Hazardous waste generated on site will be managed according to the WMP (WP Section 7.0).

3.7.7 Contaminated Soil Management (WM-7)

Contaminated soil generated on site will be managed according to the WMP (WP Section 7.0).

3.7.8 Concrete Waste Management (WM-8)

A concrete washout station will be installed per BMP fact sheet WM-8. The concrete washout station will be at least 50 feet away from drain inlets. Concrete waste generated on site will be managed according to the WMP (WP Section 7.0).

3.7.9 Sanitary/Septic Waste Management (WM-9)

Portable toilets and personnel washing station will be provided on the job site. Toilet maintenance, including proper disposal of wastes, will be provided by a licensed vendor at an expected frequency of once per week. Proper sanitary and septic waste management practices will be enforced to prevent the discharge of pollutants to stormwater.

3.8 Post-Construction Stormwater Management Measures

The general site restoration will follow the approach in the WP. The site will be restored to pre-existing conditions. Excavated area will be repaved to match the existing durable cover surface. The site restoration will ensure there is no potential for construction—related stormwater pollution, elements of this SWMP are completed or are no longer applicable, and the site is in compliance with state and local stormwater management requirements.

4.0 BEST MANAGEMENT PRACTICE INSPECTION, MAINTENANCE, REPAIR, AND RAIN EVENT ACTION PLANS

This section describes the maintenance, inspection, and repair of BMPs.

4.1 Best Management Practice Inspection

Site inspections will evaluate the implementation and performance of BMPs. Inspections will be performed by the QSP or trained personnel working under the direction of the QSP. A component of each inspection will be used from the checklist provided in Attachment 4.

Inspections will be conducted as follows:

- Daily, of immediate access roads
- Weekly, of entire site
- Prior to a likely precipitation event—a likely precipitation event is weather patterns forecasted by the National Weather Service to have 50 percent or greater probability of producing precipitation in the project area
- At 24-hour intervals during business days during qualifying rain events—a qualifying rain event has a total precipitation of 0.5 inch or greater and is distinguished from prior qualifying rain events by 48 hours or more without precipitation
- Within two days after each qualifying rain event

Inspection documentation will include the inspection date, inspection personnel, and observations. Observations of inadequate or damaged BMPs will be recorded. Inadequate or damaged BMPs will be modified and upgraded or repaired as soon as possible. Completed inspection forms will be retained at the contract file for a period of at least three years.

4.2 Best Management Practice Maintenance and Repair

The following maintenance tasks will be performed as needed:

- Removal of sediment from barriers and sedimentation devices
- Replacement or repair of significantly worn or damaged BMPs
- Replacement or repair of damaged structural controls
- Repair of damaged soil stabilization measures
- Other control maintenance as defined in each BMP fact sheet (Attachment 3)

Maintenance/repair related to a storm event will be completed within 48 hours of the end of the 0.5-inch or greater storm event.

5.0 TRAINING

Personnel involved with implementing requirements of this SWMP will be appropriately trained. The General Permit (SWRCB, 2012) requires that elements of this SWMP be developed by a QSD and implemented by a QSP. The QSP may delegate tasks to trained employees provided adequate supervision and oversight are provided. Personnel will attend a training class held by the QSP or his designee before beginning work.

The QSP and Project Quality Control (QC) Manager will maintain a file documenting training. This SWMP will be reviewed as it relates to the various responsibilities for personnel implementation and awareness. Additional training may be provided as activities change or other conditions warrant, or as new personnel arrive on site.

6.0 RESPONSIBLE PARTIES AND OPERATORS

This section describes the responsible personnel and training for the project.

6.1 Responsible Parties

Table 3 lists the individuals that are responsible for implementing and/or making necessary revisions to this SWMP.

6.2 Contractor List

There are no SWMP subcontractors identified for this project.

7.0 CONSTRUCTION SITE MONITORING PROGRAM

This section describes the CSMP. The CSMP is a site-specific plan for implementing day-to-day components of this SWMP.

7.1 Risk Level 1 Requirements

The project is determined to be Risk Level 1 (Section 2.4). Attachment C of the General Permit (SWRCB, 2012) presents requirements for Risk Level 1. For Risk Level 1 sites, it is necessary to perform visual monitoring and sample for non-visible pollutants as applicable. The General Permit requires storm-related inspections prior, during, and subsequent to qualifying rain events. A qualifying rain event is defined as an event that produces 0.5 inch or more of precipitation at the time of discharge, with a 48-hour or greater period between rain events.

7.2 Monitoring Locations

This site will not produce direct discharges. Effluent discharges will be in the form of overland sheet flow from storm events that will be directed through appropriate BMPs. The upgradient boundary of the site will be inspected for evidence of run-on coming onto the site from outside areas. Run-on/runoff may enter/exit the site as overland sheet flow, which will require the use of perimeter controls (such as fiber roll and/or sand bags [or equivalent]). Because the site risk level is Risk Level 1, water quality samples will not be collected during storm events.

7.3 Safety

Site inspection is required during rain/storm events. Storm conditions may increase safety hazards and potentially result in unsafe work conditions. Site safety and health hazards may include environmental hazards (such as storm condition) and physical hazards (such as slips, trips, and falls). Site monitoring will cease if site conditions are too dangerous. Hazardous conditions preventing monitoring will be logged and included in site reports. The Navy-accepted APP/SSHP (APTIM, 2019) provides further procedures for site safety and health in conformance with federal and state law and regulation. The APP/SSHP and professional judgment of APTIM Site Safety and Health Officer will be the basis by which unsafe work conditions will be identified.

If unsafe work conditions prevent completion of inspection mandated by this SWMP, the specifics of the unsafe work condition (including date, time, name of person identifying the condition, and the specific condition/hazard) will be recorded. This record will be retained with other stormwater documentation.

7.4 Visual Monitoring (Inspections)

Site inspections will be performed weekly, prior to, during, and following rain events (Section 5.0).

In addition to the weekly and storm-related BMP inspections, quarterly non-stormwater visual inspections will be conducted. For these quarterly inspections, drainage areas will be inspected for the presence of, or indications of prior, unauthorized and authorized non-stormwater discharges and their sources. Attachment 4 includes an inspection checklist.

7.5 Water Quality Sampling and Analysis

This subsection describes water quality sampling and analysis requirements.

7.5.1 Sampling and Analysis for Non-visible Pollutants

Because no contact is expected between construction materials (other than BMPs themselves) and precipitation or stormwater, sampling and analysis for non-visible pollutants are not required unless, upon site inspection, a breach, malfunction, leakage, or spill from a BMP has been observed or construction materials are in contact with precipitation or stormwater.

Stormwater sampling will be conducted should inspection indicate that there has been a breach, malfunction, leakage, or spill from a BMP. If a point discharge of stormwater occurs as a result of a breach of a berm or other BMP that is designed to preclude flow, an additional storm event monitoring point would be designated for the point closest to where the breach occurred, within the outgoing stormwater flow, if outflow is present at the time of observation.

Analysis of samples for non-particulate pollutants may include some of the following:

- ROCs by EPA Methods 901.1/905.0
- Turbidity (field measurement of Nephelometric Turbidity Units)
- pH (field measurement of standard units)

Stormwater samples will be collected as grab samples using clean disposable sampling equipment (bailers, dipper samplers, or equivalent). Stormwater samples will be collected into certified clean sample containers provided by the subcontract analytical laboratory. The sampling and analysis plan (Appendix B) further discusses sample collection, handling, documentation, analysis, quality assurance/QC, and data management.

7.5.1.1 Sampling Procedure

If sampling for non-visible contaminants becomes necessary, one or more stormwater samples will be collected at discharge locations that drain the areas identified by the visual observations and can be safely accessed. Samples will be collected using the following procedure:

1. Obtain an unused disposable bailer for each sample event.
2. Put on a new, clean, and chemical-resistant pair of disposable gloves.

3. Tie the bailer to a nylon cord or string.
4. Lower the bailer into the containment area. Allow sufficient time for the bailer to fill with water.
5. Retrieve the bailer and fill appropriate bottle(s) for analyses being requested.
6. If the storage container is equipped with sampling taps, samples may be collected at these locations.
7. Cap the bottle(s) and wipe moisture from the outside of the bottle(s).
8. Label, package, and prepare the samples for shipment to the laboratory. Place the samples in cold storage after collection.
9. Field documentation including field logbooks and chains-of-custody (CoCs) will be filled out during sample collection, in accordance with the sampling and analysis plan (Appendix B).

7.5.2 Sample Custody and Documentation

Sampling information will be recorded on a CoC form and in a permanently bound field logbook. Entries will be legible and recorded in indelible ink.

7.5.3 Sample Numbering and Labeling

Samples will be uniquely numbered using a system that identifies the location, type, and sequential number. Water samples will be numbered as follows:

- Stormwater
  - SW-01 through SW-XX (sequentially as needed to obtain correct frequency)

Sample labels will be filled out with indelible ink and affixed to each sample container. Non-waterproof sample labels will be covered with clear tape. Sample containers will be placed in resealable plastic bags to protect the sample from moisture during transportation to the laboratory. Each sample container will be labeled with the following, at minimum:

- Sample identification number
- Sample collection date (month/day/year)
- Time of collection (24-hour clock)
- Sampler's initials
- Analyses to be performed
- Preservation (if any)
- Location (i.e., site name)

7.5.4 Sampling Containers, Preservatives, and Holding Times

Table 4 provides a list of the sample containers, preservatives, and holding time requirements for each analytical method.

7.5.5 Sample Packaging and Shipment

After sample collection, sample labels will be affixed to each sample container. Each sample will be placed in a resealable plastic bag to keep the sample container and the label dry. Glass sample containers will be protected with bubble wrap (or other cushioning material) to prevent breakage. A temperature blank will be placed in every cooler with samples.

Samples to be shipped by commercial carrier will be packed in a sample cooler lined with a plastic bag. Ice will be added to the cooler in sufficient quantity to keep the samples cooled to 4±2 degrees Celsius for the duration of the shipment to the laboratory. Sample cooler drain spouts will be taped from the inside and outside of the cooler to prevent leakage. Saturday deliveries will be coordinated with the laboratory.

If samples are picked up by a laboratory courier service, the CoC form will be completed and signed by the laboratory courier. The cooler will then be released to the courier for transportation to the laboratory.

If a commercial carrier is used, the CoC form will include the air bill number in the "Transfers Accepted By" column and will be sealed in a resealable bag. The CoC form will then be taped to the inside of the sample cooler lid. The cooler will be taped shut with strapping tape, and two custody seals will be taped across the cooler lid. Clear tape will be applied to the custody seals to prevent accidental breakage during shipping. The samples will then be shipped to the analytical laboratory.

The shipping of samples to the analytical laboratory by land delivery services will be performed according to the U.S. Department of Transportation regulations. The International Air Transportation Association regulations will be adhered to when shipping samples by air courier services. Transportation methods will be selected to assure that the samples arrive at the laboratory in time to permit testing according to established holding times and project schedules. No samples will be accepted by the receiving laboratory without a properly prepared CoC record and properly labeled and sealed shipping container(s).

7.5.6 Quality Assurance

Analytical data will be obtained using published, standard methods in a U.S. Department of Defense Environmental Laboratory Accreditation Program-certified laboratory. In cases, detection levels and quality assurance/QC methods will be in accordance with U.S. Department of Defense *Quality Systems Manual for Environmental Laboratories*, Version 5.1 (2017) and the listed EPA methods.

8.0 UPDATING THE STORMWATER MANAGEMENT PLAN

This SWMP will be updated as needed to reflect changing site conditions.

9.0 REFERENCES

Aptim Federal Services, LLC, 2019, *Final Accident Prevention Plan, Parcels D-2, UC-1, UC-2, and UC-3, Radiological Confirmation Sampling and Survey, Former Hunters Point Naval Shipyard, San Francisco, California*.

Regional Water Quality Control Board, San Francisco Bay Region, 2007, *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*, January 18.

State Water Resources Control Board, 2012, *National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities*, Order No. 2009-0009-DWQ, as amended by Order No. 2012-0006-DWQ, NPDES No. CAS000002, July 17.

U.S. Department of Defense, 2017, Quality Systems Manual for Environmental Laboratories, Version 5.1.

Figure

Figure 1
Stormwater Management, Parcels D-2, UC-1, UC-2, and UC-3

Tables

Table 1
Total Monthly Rainfall Amounts (inches), San Francisco, California

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	9.33	7.43	2.96	2.20	T	0.05	0.00	T	0.22	0.21	2.77	0.07
2018	4.85	0.39	3.32	2.24	0.01	0.00	T	0.00	0.00	0.16	3.07	1.65

Notes:

T trace

The total annual rainfall for 2017 was 25.24 inches and for 2018 was 15.69 inches.

Source: National Weather Service Forecast Office (https://w2.weather.gov/climate/xmacis.php?wfo=mtr)

Table 2
Schedule for Best Management Practice Installation

Construction Activity Milestones		Scheduled Date	Revised Dates/Comments
Start of Construction			
BMP Installations	Erosion and Sediment Control (EC and SE)	September 2020 through January 2022 (prior to land disturbance activities at various locations)	
	Non-Stormwater (NS)	September 2020 through January 2022 (prior to land disturbance activities at various locations)	
	Waste Management (WM)	September 2020 through January 2022 (prior to land disturbance activities at various locations)	
	Wind Erosion (WE)	September 2020 through January 2022 (prior to land disturbance activities at various locations)	
BMP Removal		January 2022	
Complete Construction		January 2022	
File Notice of Termination		Not Applicable	

Notes:

BMP *best management practice*

Table 3
Responsible Contractor Personnel

Name	Title	Specific Responsibility
Owen Chao, PE, QSD/QSP or qualified designee	Project Engineer, QSD/QSP	Preparation of this SWMP and selection of BMPs Revisions to this SWMP Training personnel listed Implementation of inspection and monitoring activities of this SWMP Supervising the personnel below in discharging duties related to this SWMP
Nels Johnson, PE, PMP or qualified designee	Project Manager	Review of this SWMP and selection of BMPs Revisions to this SWMP in consultation with the QSD Review of SWMP-related reporting
Sean Orman or qualified designee	Construction Manager	Implementation of CSMP, maintaining inspection and monitoring records, reporting, and regulatory notification
Lee Laws or qualified designee	Project Quality Control Manager	Implementation of inspection and monitoring activities of this SWMP and BMPs as per Section 3.0

Notes:

BMP	*best management practice*
CSMP	*construction site management plan*
PE	*professional engineer*
PMP	*project management professional*
QSD	*Qualified Stormwater Pollution Prevention Plan Developer*
QSP	*Qualified Stormwater Pollution Prevention Plan Practitioner*
SWMP	*stormwater management plan*

Table 4
Water Sampling Containers, Preservatives, and Holding Times

Matrix	Analytical Group	Analytical Method Reference	Container	Preservation Requirements	Maximum Holding Time
Water	ROCs (gamma-emitting)	Preparation: ST-RD-0102 Analysis: 901.1	One × 1-L poly/glass	Nitric Acid (HNO_3) to pH<2	180 days
Water	ROCs (strontium-90)	Preparation: ST-RC-050 or ST-RD-0403 R8 Analysis: 905.0	One × 1-L amber bottle	Nitric Acid (HNO_3) to pH<2	180 days
Water	TPH as gasoline	Preparation: 5030 Analysis: 8015	Three × 40-mL vials, Teflon®-lined septum	Hydrochloric acid (HCl) to pH<2, Cool at 4±2°C	14 days
Water	TPH as diesel/ motor oil	Preparation: 3520/3510 Analysis: 8015	Two × 1-L amber bottles	Cool at 4±2°C	7 days to extraction, 40 days after extraction
Water	TSS	Preparation & Analysis: SM2540D	One × 500-mL HPDE	Cool at 4±2°C	7 days

Notes:

<	*less than*
±	*plus or minus*
°C	*degree Celsius*
HDPE	*high-density polyethylene*
L	*liter*
mL	*milliliter*
ROC	*radionuclide of concern*
TPH	*total petroleum hydrocarbons*
TSS	*total suspended solids*

Attachment 1
General Permit

Attachment 2
Risk Level Determination

Attachment 3
Best Management Practices Fact Sheets

Attachment 4
Site Inspection Checklist

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX D

DRAFT FINAL
TRAFFIC CONTROL PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX D

DRAFT FINAL
TRAFFIC CONTROL PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Aptim Federal Services, LLC
4005 Port Chicago Highway, Suite 200
Concord, CA 94520

Contract Number: N62473-17-D-0006; Task Order: N6247318F5345
DCN: APTM-0006-5345-0009

Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

APPENDIX D

DRAFT FINAL
TRAFFIC CONTROL PLAN

Radiological Confirmation Sampling and Survey
Parcels D-2, UC-1, UC-2, and UC-3

FORMER HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

October 2020

Nels Johnson, PE, PMP
Senior Project Manager

Date

Table of Contents

LIST OF FIGURES ..... **I**
ACRONYMS AND ABBREVIATIONS ..... **I**

1.0 INTRODUCTION **1-1**
1.1 General Approach 1-2
1.2 Site-Specific Approach 1-2
1.3 Traffic Control 1-3
1.3.1 Traffic-Control Notifications 1-3
1.3.2 Traffic Routes 1-4
1.3.3 Configurations for Temporary Conditions 1-4
2.0 REFERENCES **2-1**

List of Figures

Figure 1 Site Layout, Parcels D-2, UC-1, UC-2, and UC-3
Figure 2 Soil Site Parcel UC-3 (Phase 1 and Phase 2 Areas)
Figure 3 Soil Site Parcel UC-1 (Phase 1 and Phase 2 Areas)
Figure 4 Soil Site Parcel UC-2 (Phase 1 and Phase 2 Areas)

Acronyms and Abbreviations

APTIM	Aptim Federal Services, LLC
CSO	Caretaker Site Office
HPNS	Hunters Point Naval Shipyard
MUTCD	*California Manual on Uniform Traffic Control Devices for Streets and Highways*
SD	storm drain
SS	sanitary sewer

1.0 INTRODUCTION

Aptim Federal Services, LLC (APTIM) has prepared this traffic control plan in partial fulfillment of the work scope of Contract No. N62473-15-D-0811, Contract Task Order N6247315D5345. This traffic control plan is Appendix C to the removal site evaluation work plan and is prepared for Parcels D-2, UC-1, UC-2, and UC-3 at former Hunters Point Naval Shipyard (HPNS), San Francisco, California (Figure 1).

Work will include the following remedial activities that may affect the surface traffic patterns:

- Delivery of materials and equipment to the site
- Mobilization/demobilization of subcontractors (i.e., utility clearance, land surveying, paving)
- Mobilization/demobilization of heavy equipment (i.e., excavators, loaders, dump trucks)
- Removal of surface features (i.e., roadways, drainage) and overburden soil
- Excavation of designated trenches associated with former sanitary sewer (SS) and storm drain (SD) lines
- Transportation and disposal of waste materials (if required)
- Restoration of surface features (asphalt roadway and drainage features)
- Parking and staging of APTIM vehicles from field construction personnel

Daily access to HPNS of contractor and personal vehicles is currently controlled through a manned checkpoint along Galvez Avenue (451 Galvez Avenue). For deliveries using trucks larger than a box van (e.g., heavy equipment, dump trucks), ingress and egress will be limited to the entrance gate along Crisp Road at the corner of Griffith Street. However, as a direct result of planned work activities in this vicinity, it is expected that portions of Crisp Road will be made unavailable from early Spring 2021 to late Fall 2021. To help minimize the potential impact to traffic flow both onto and off the facility, traffic entering through the current Crisp Road checkpoint will continue as normal for approximately the first 300 yards, after which traffic will be diverted along the southern shoulder until traffic is able to remerge onto Spear Avenue. Figures 2 through 4 show the proposed general traffic routes for both inbound as well as outbound traffic to the Crisp Road gate.

Traffic-control devices and measures placed and maintained on the streets and highways in California are required to conform to the *California Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD; State of California Department of Transportation, 2014). This traffic control plan was developed to ensure there is adequate consideration for the safety and convenience of motorists, pedestrians, and workers during construction. Furthermore, delivery and transportation of equipment and materials will only be allowed between 0700 and 1700 to minimize interference with the normal

traffic pattern in the area. APTIM construction and delivery signs will be placed at necessary locations from the entrance gate at Crisp Road to the intersection of Crisp Road and Spear Avenue.

1.1 General Approach

Although not required, the following are the MUTCD principles (State of California Department of Transportation, 2014) most applicable to work at HPNS and will be used as guidance during implementation of supplemental traffic-control measures:

- MUTCD, Part 6, "Temporary Traffic Control," Chapter 6A, "General Information"
- MUTCD, Part 6, "Temporary Traffic Control," Chapter 6B, "Fundamental Principles"
- MUTCD, Part 6, "Temporary Traffic Control," Chapter 6E, "Flagger Control"
- MUTCD, Part 6, "Temporary Traffic Control," Chapter 6F, "Temporary Traffic Control Zone Devices"

1.2 Site-Specific Approach

HPNS is considered private property and access to the general public is restricted. Current traffic activity onto HPNS is limited; however, construction activities at the project area are anticipated to have an impact on existing traffic.

The primary scope of work under this task order involves the investigation of potentially radiologically impacted former SS/SD lines, impacted buildings, and former building sites in Parcels D-2, UC-1, UC-2, and UC-3 (i.e., Crisp Road). To thoroughly investigate the former SS/SD lines, a phased approach was designed based on a proposal by the regulatory agencies to achieve a high level of confidence that the established remedial goals have been met for soil. For Phase 1, 100 percent of soil will be re-excavated and characterized at 17 former trench locations associated with former SS/SD lines. Exposing the target soil will require removal of overburden material, including asphalt, aggregate base coarse, concrete, gravel, and/or debris, thus rendering large stretches of the existing main paved roadways inaccessible during certain phases of the proposed fieldwork. As necessary, traffic will be diverted along the southern shoulder along the current roadway and/or an alternative route will be provided.

Based on the planned remedial activities, portions of Crisp Road, Spear Avenue, and Fischer Avenue will be closed intermittently throughout the duration of field activities in locations shown on Figures 2, 3, and 4. Per the planned schedule (which is subject to change), the anticipated closures/durations and detour routes are as follows:

- **Parcel UC-3; The property associated with Crisp Road: Spring 2021 through Fall 2021 (Figure 2):** Traffic traveling east and westbound along Crisp Road will continue as normal for approximately the first 300 yards after which traffic will be diverted along the southern shoulder until traffic is able to remerge onto Spear Avenue.

- **Parcel UC-1; The property associated with Spear Avenue: Spring 2021 through Fall 2021 (Figure 3):** Traffic traveling east and westbound along Spear Avenue will be diverted onto the paved surface of Parcel G, directly south of the proposed work areas until traffic is able to remerge onto the adjoining Crisp Road and Fischer Avenue.
- **Parcel UC-2; The property associated with Fischer Avenue: Spring 2021 through Fall 2021 (Figure 4):** Traffic traveling southeast and northwest along Fischer Avenue will be diverted through the contractor office trailer/laydown area.

Figures 2 and 3 display the alternative route(s) that will be available so that access to the buildings and businesses near the project area will remain open.

1.3 Traffic Control

Construction work performed within the project area may directly or indirectly affect vehicle parking areas, roadways, and pedestrian walkways at former HPNS. Figures 2 through 4 depict the three work areas that will be closed intermittently during the total duration of fieldwork and show the planned traffic routes to be used during the fieldwork. Section 1.3.2 discuses traffic routes. Planned traffic routes may require additional changes based on final site conditions. To the extent possible, APTIM will take the necessary steps to minimize the impact on local traffic and businesses. Haul trucks entering and exiting former HPNS will be required to follow specified traffic routes (Figures 2 through 4). Traffic controls (e.g., detours, markers, signs) will be positioned before initiating work. Barricades with flashing lights, flags, signs, flag persons, and other traffic-control measures will be used as needed to inform the general public of lane closures, and to direct trucks entering the roadway. Traffic-control barricades and signs will comply with the State of California Department of Transportation specifications (Section 1.1). APTIM will work with the Caretaker Site Office (CSO) Representative and other stakeholders to address traffic issues that may arise over the course of the project.

1.3.1 Traffic-Control Notifications

The following parties will receive the traffic control plan and other relevant sections of the site removal evaluation work plan, including the traffic-control discussion, and will be notified at least two working days in advance of construction activities that will alter traffic flow:

- The City of San Francisco
- The City of San Francisco Fire Department
- The City of San Francisco Police Department
- CSO Representative
- Resident Officer in Charge of Construction

If it becomes necessary to modify the vehicular patterns described herein during the performance of the remedial activities, APTIM will notify the CSO Representative and Resident Officer in Charge of

Construction representatives before implementation of the proposed modification. The Navy will notify HPNS tenants, including but not limited to the occupants of the commercial kitchens adjacent to the work area, of the traffic control routes.

1.3.2 Traffic Routes

Figures 2 through 4 show the planned traffic routes for haul trucks/deliver trucks entering and leaving the project area. Trucks on site to deliver materials for site restoration will travel east along Crips Road to Fischer Avenue, turning right into the contractor office trailer/laydown area (Figure 4), or as necessary, turning left from Spear Avenue into the soil segregation system area (Figure 3).

Trucks leaving the site, either loaded or empty, will exit HPNS by following the same route used for arrival unless otherwise directed. The materials staging area will be fenced and inaccessible to the public for health and safety concerns for the duration of the fieldwork.

During field activities, the project area will remain enclosed by perimeter fencing.

The roads used by the trucks and construction equipment during fieldwork activities are not heavily used by the public and only minimal inconvenience to HPNS users is expected. APTIM will place appropriate signs to alert HPNS drivers to changed conditions due to construction traffic.

1.3.3 Configurations for Temporary Conditions

Traffic detours, roadway diversions, and lane realignments will be clearly marked with signage that is continuous and complete to guide drivers back to the normal route as well as to warn drivers of potential hazards. Wherever possible, traffic will be diverted from the impacted, current roadway, to an alternate paved route. Wherever an alternate paved route does not currently exist (e.g., along Crisp Road at Parcel UC-3) a new temporary gravel access road will be constructed.

Temporary gravel access roads will be constructed to be a minimum of 12 feet wide, designed and constructed to provide weather ingress and egress to the site.

1. Proposed temporary access roads will be roughed into the existing ground surface using a CAT D6 Dozer or similar type of equipment.
2. A soil stabilization fabric (Mirafi 600x or equivalent) will be placed over the top of the rough subgrade; as a separator, this will eliminate the loss of aggregate material into the subgrade and prevent the upward pumping of soil fines into the aggregate, thus increasing the design life of the temporary road.
3. A minimum 8-inch thick layer of acceptable road aggregate (3/4-inch crushed rock or equivalent) will be placed and compacted with heavy equipment during placement.

4. If required, drainage culverts will be installed to allow for the unimpeded flow of surface water across the roadway. Drainage culvers will be constructed of 18-inch diameter polyethylene pipe, or equivalent.

The speed limit on temporary gravel access roads will be limited to 15 mph to ensure safety and mitigate dust emissions.

2.0 REFERENCES

State of California Department of Transportation, 2014, *California Manual on Uniform Traffic Control Devices for Streets and Highways*, November.

Figures

Figure 1
Site Layout, Parcels D-2, UC-1, UC-2, and UC-3

Figure 2
Soil Site Parcel UC-3 (Phase 1 and Phase 2 Areas)

Figure 3
Soil Site Parcel UC-1 (Phase 1 and Phase 2 Areas)

Figure 4
Soil Site Parcel UC-2 (Phase 1 and Phase 2 Areas)